AIR CAMPAIGN

BATTLE OF BERLIN 1943–44

Bomber Harris' gamble to end the war

RICHARD WORRALL | ILLUSTRATED BY GRAHAM TURNER

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INTRODUCTION

Air Marshal Sir Arthur Harris, C-in-C Bomber Command (February 1942–September 1945). After leading his force to successes in 1942, such as the 1,000 bomber raid on Cologne, and throughout 1943 with the battles of the Ruhr and Hamburg, Harris' reputation among the senior Air Staff lowered considerably during the Battle of Berlin. (Photo by Leonard McCombe/ Picture Post/Hulton Archive/Getty Images)

From late 1943 into early 1944, a titanic struggle raged in the night skies over Germany between RAF Bomber Command and the Luftwaffe's night-fighter squadrons. These battles were all part of an air campaign, the Battle of Berlin, which had been undertaken by the Commander-in-Chief (C-in-C) Bomber Command Air Chief Marshal Sir Arthur Harris with one simple, ambitious aim in mind: the defeat of the Third Reich. Involving a major effort by the Royal Air Force over a period of six months, it was designed as the ultimate application of strategic airpower, in which an enemy was to be eliminated by bombing alone.

The history of Bomber Command has been extensively written about, yet there are comparatively few accounts that cover the Battle of Berlin as a single episode. This is a surprising omission, for this was a campaign of massive implications and equally enormous proportions. It began with a false start, with three attacks in August/September 1943, before Harris suspended the campaign until the middle of November. After this, it became a sustained effort, fought in bitter winter weather, in which Bomber Command went to the German capital a total of 16 times. For aircrew veterans, the struggle against Berlin would be remembered as an increasingly hard, desperate slog. At the highest level, among Britain's senior civilian and military leadership, it became increasingly controversial and divisive. Indeed, the campaign was as notable for its behind-the-scenes infighting within the Royal Air Force as it was for its nightly dice with the air defences of the Third Reich.

The Battle of Berlin was the absolute fulfilment of beliefs that Harris, the foremost 'Bomber Baron', had long expressed. Becoming the C-in-C of Bomber Command in February 1942, his first year would be partially spent explaining that strategic bombing was *the* decisive war-winning weapon; his second year would be spent proving this notion. In June 1942 Harris gave a televised talk to *Pathé News* and famously declared:

> The Nazis entered this war under the rather childish delusion that they were going to bomb everybody else and nobody was going to bomb them. At Rotterdam, London, Warsaw and half a hundred other places they put that rather naive theory into operation. They sowed

Air Marshal Sir Richard Peirse, C-in-C Bomber Command (October 1940–January 1942). He was sacked for pushing ahead with a Berlin operation on 7/8 November 1941 in bad weather, which resulted in heavy aircraft losses. (Photo by Fred Morley/ Fox Photos/Getty Images)

> the wind and now they are going to reap the whirlwind. Cologne, Lübeck, Rostock – those are only just the beginning...Now we are beginning to pass to the real offensive. We cannot send a thousand aircraft a time over Germany every time as yet. But the time will come when we can do so...There's a lot of people who say that bombing can never win a war. Well, my answer to that is that it has never been tried yet. And we shall see.

Behind the belligerent expressions, what Harris was alluding to was that strategic bombing was in its infancy. It was to be a new way of fighting, a way of avoiding a repeat of the bloody catastrophe of trench warfare along the Western Front. Therefore, in summer 1943, the attempt to win the war by destroying Berlin had no precedent to indicate its success, but, equally, nothing would indicate its ultimate failure either. This was to be the high point of the war for the 'Bomber Barons', yet it would prove to be a watershed: in attempting an independent way of finishing the war they would in fact finish their force's role as a purely strategic bomber force. For after spring 1944 Bomber Command's efforts became integrated into the wider efforts of the Allied powers to defeat Nazi Germany on land.

Bomber Command's campaign against Berlin was to be no 'clean' campaign of progressively degrading an enemy's air defence assets and key military and industrial targets, but was instead designed to destroy the many areas of the Greater Berlin region. Aimed at the civilian population, area bombing's fundamental intention was to destroy the means by which they could participate in Germany's war economy through the destruction of a city's public utilities, workers' housing, transportation, and electrical and gas supplies, not to mention breaking their will to work. This meant primarily attacking town centres, not specific industrial suburbs. Area bombing was also designed to divert the efforts of Germany's civilian population away from armaments production and towards reconstruction and rubble clearance, while important war factories, industrial plants and oil refineries would also be caught up in the general destruction. Consequently, through area bombing, Bomber Command was aiming to fulfil the Casablanca Directive, the instruction on bombing policy that had been agreed by the Combined Chiefs of Staff (CCOS) at the Casablanca Conference in January 1943, which stated:

> The Primary Object of the bomber offensive was the progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people, to a point where their capacity for armed resistance would be fatally weakened.

Harris received this instruction on 4 February 1943, and it would govern the bomber offensive until the change in bombing policy some 11 months later during the Battle of Berlin. In the meantime, the area bombing of German cities proved devastating – the most infamous example being Hamburg – and the tactic was now to be turned upon the toughest target of all, namely Berlin, which in Harris' famous memorandum of 3 November 1943 was designated the top priority.

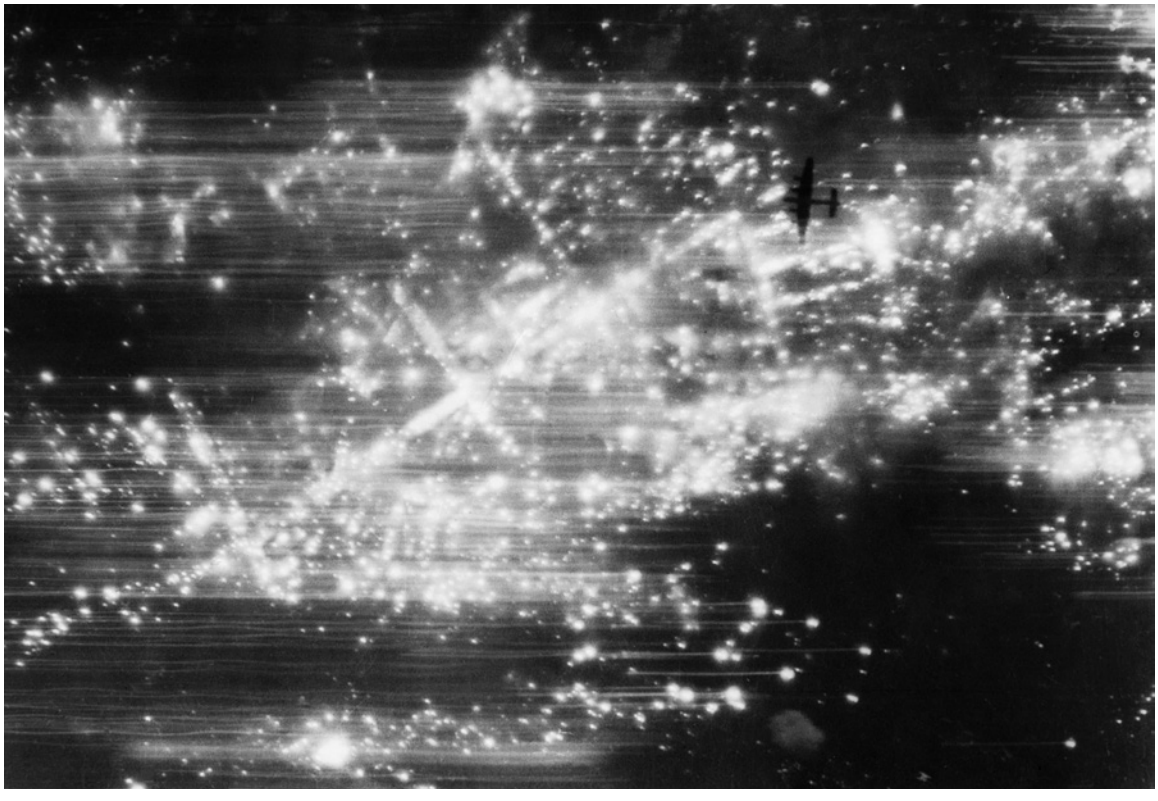
The reason for attacking Berlin had not always been the same, of course. If in autumn 1943 the rationale was to destroy it to win the war, then the early part of the year saw different reasoning. Between January and March 1943 Berlin was bombed under Operation *Tannenburg* for political reasons – appeasing Stalin over the Anglo-American failure to launch a Second Front in 1943. After the first operation, Churchill told the Secretary of State for Air Sir Archibald Sinclair that '[I] trust you will repeat several times so as to make a real impression if weather permits', and it shows the prime minister's active intervention in encouraging attacks on the German capital at both this time and later in August 1943. It was therefore little surprise that Harris would appeal to Churchill in a memorandum about the restarting of the Battle of Berlin in November – but this would prove a misjudgement.

It was so because the war – and the strategic situation – had changed by autumn 1943. Before this, the war situation on land had involved momentous Russian victories on the Eastern Front but with the Western Allies, who were both unable and unwilling to attack Germany in Western Europe, focusing instead on the Mediterranean theatre. With an invasion of Western Europe considered not possible until Germany's military power had been weakened 'by the destruction of the German industrial and economic war machine', the best weapon to take the war against Germany, weaken it, and thereby help Russia was the Anglo-American heavy-bomber force, whose expansion to 4,000–6,000 aircraft was recommended as the highest priority. Given these circumstances, strategic bombing seemed a favourable option at this time as it meant a window of opportunity existed for bombing to prove its worth. Yet by August 1943 this opportunity – if not closed – was at least sharply qualified, for the British and Americans had finally decided on launching a Second Front against Germany in mid-1944. While Harris believed strategic bombing could still secure victory unilaterally, it was now in competition with the demands of the land invasion. Yet most importantly, it had set a time limit on how long the strategic air campaign against Germany could continue – and this was April 1944. After this date, the bombers would have to switch to supporting the preparations and operations of the land campaign in Normandy. As the British official history noted, the Battle of Berlin was therefore 'the last opportunity for decisive strategic air action' before Operation *Overlord*.

The decision to undertake a Second Front had come at a time when the momentum was firmly behind Bomber Command. The aim had always been the progressive destruction of Germany through strategic airpower. As early as July 1942, Harris remarked that:

> Victory, speedy and complete, awaits the side which first employs air power as it should be employed… As this force is made up: (i) Progressively and utterly to destroy Bremen, Bremerhaven, Wilhelmshaven, Hamburg, Kiel…; (ii) Wreck the Ruhr and Berlin; (iii) Finally turn on Japan.

After 1942 was spent as a year of consolidation and technological development, Harris launched his 'Main Offensive' against Germany in March 1943, which lasted until



An aiming point photograph taken from 19,000ft. A lower flying Lancaster can be seen silhouetted against the incendiary fires raging below, which have also marked out the city's main streets. This photograph was taken on 8/9 October 1943 during a devastating attack on Hanover's city centre, some six weeks before the Battle of Berlin commenced. (Photo by No. 460 Squadron RAAF/ IWM via Getty Images)

March 1944. It comprised four major air battles: three intended and one a by-product of circumstances. It started with the Battle of the Ruhr from March to July 1943, which was followed by the quick but destructive Battle of Hamburg, and then the opening raids of the Battle of Berlin. But as Harris admitted later in his post-war despatch on bomber operations, 'Berlin was, of course, a very different proposition from the Ruhr or coastal targets', and the high aircraft losses and the inaccurate bombing forced a re-think. Berlin's sheer size meant its capabilities really had to improve before the German capital was tackled again. Consequently, in pulling back from Berlin in September Bomber Command would fight its 'unintended' campaign of 1943, namely the Battle of Hanover – a thoroughly miserable and costly experience against a target that lay within central Germany. The experience over Hanover only served to confirm Bomber Command's difficulties in terms of target-marking and conducting long-distance penetrations in the face of a revitalized Luftwaffe night-fighter force even before the Battle of Berlin re-started in mid-November 1943. This, then, would be one of the critical issues during the forthcoming campaign: could Bomber Command achieve its aim over Berlin in the face of a recovering Luftwaffe? The second issue was whether Bomber Command could deliver a sufficient tonnage of bombs accurately enough on the target. On both these considerations would ultimately hang the outcome of the Battle of Berlin.

What was being attempted was a new technique of waging war that was being pioneered during wartime itself. The Battle of Berlin was a certain type of airmen's campaign, tangential to the land campaign. It was not to be complementary to the land war and the invasion of Western Europe, but in their minds was a direct substitute for it. By summer 1943, with the Ruhr ruined and Hamburg destroyed, Harris reasoned the final defeat of Nazi Germany would be achieved by destroying Berlin and Germany's other major cities. It was a strategic bombing campaign to achieve complete victory.

CHRONOLOGY

1943

16/17 January Bomber Command attacks Berlin under Operation *Tannenburg*. Designed to coincide with major Soviet victories on the Eastern Front, this was the first major Berlin raid since November 1941. Over the next two months Berlin would suffer five major raids.

21 January The Combined Chiefs of Staff's directive for the Combined Bombing Offensive (CBO) stresses: 'Your primary object will be the progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened'. It also states Berlin 'should be attacked when conditions are suitable for the attainment of specially valuable results unfavourable to the morale of the enemy or favourable to that of Russia'. This instruction became known as the Casablanca Directive.

16 February A specific directive on Berlin states: 'Recent events on the Russian front have made it most desirable in the opinion of the Cabinet that we should rub in the Russian victory by further attacks on Berlin as soon as conditions are favourable. The C.A.S. [Chief of Air Staff] wishes you to act accordingly'.

5/6 March Harris begins the Battle of the Ruhr with a major attack on Essen. It lasts five months until July.

10 June The Pointblank Directive is issued. This reiterates the general aim of the Casablanca Directive but adds ball bearing plants and Germany's aircraft industries as a priority.

16 June Responding to a query from Marshal of the Royal Air Force Sir Charles Portal, Harris explains his thinking on future bombing operations: 'We will then go progressively further into Germany in I hope sufficient strength to be able to leave behind us, as we progress, a state of devastation similar to that now obtaining in the Ruhr; if the Boche waits for it', he writes, before culminating by giving Berlin 'a really hearty hammering'.

24/25 July Start of Battle of Hamburg. Lasting ten days, it comprises four major attacks by the British bombing force including the infamous 'firestorm raid' of 27/28 July. This sets a benchmark for the destructiveness of area bombing, and Harris will aim to achieve similar levels of destruction on other German cities, including Hanover and Berlin.

16/17 August Harris attacks Turin. This is the last raid by Bomber Command on an Italian city.

17/18 August Bomber Command attacks the V-2 rocket facility at Peenemünde.

20 August Churchill sends his congratulations on the Peenemünde attack to Secretary of State for Air Sir Archibald Sinclair but then asks: 'meanwhile, what about Berlin?'.

21 August Portal replies on Sinclair's behalf: 'Harris intends to initiate the operation [Berlin] you suggest as soon as present moon has waned. He considers that a total of 40,000 tons will be required if the Hamburg scale of attack is to be applied. The operations would be of a prolonged nature since it would be necessary to shift attacks intermittently to other major targets so as to prevent undue concentration of enemy defences against this particular attack'.

23/24 August Berlin (Operation 1) marks the opening of the Battle of Berlin.

25 August Generalfeldmarschall Erhard Milch gives a speech on German aircraft production. He stresses the Bf 109 and Bf 110, together with the Fw 190, must be the priority.

31 August/1 September Berlin (Operation 2).

3 September Harris is informed by Deputy Chief of the Air Staff Sir Norman Bottomley that while the CBO's general objective remained, Bomber Command must now act on the decision reached at the Quebec Conference that 'the material reduction of German air combat strength by the successful prosecution of the Combined Bomber Offensive … [is] a prerequisite to *Overlord*'.

3/4 September Berlin (Operation 3). Within days Harris suspends the air campaign owing to high losses and poor bombing results due to the inability of H2S radar to identify the centre of this huge city.

22/23 September Bomber Command begins the Battle of Hanover. An unexpectedly difficult – and costly – target, the city is attacked four times over the next three and a half weeks.

3 November Harris sends Churchill a memorandum on the bombing war. It famously concludes: 'I feel certain that Germany must collapse before this programme which is more than half completed already, has proceeded much further. We have not got far to go… We can wreck Berlin from end to end if the USAAF will come in on it. It will cost between us 400–500 aircraft. It will cost Germany the war'. Such a claim causes considerable unease among an Air Staff who want Bomber Command to help the USAAF by attacking the ball bearing plants at Schweinfurt and centres of German aircraft production.

18/19 November Berlin (Operation 4); Harris sends all-Lancaster force to the capital with the Halifaxes and Stirlings sent on a diversionary raid to Mannheim/ Ludwigshafen. The Battle of Berlin recommences.

22/23 November Berlin (Operation 5) sees a maximum effort by all Bomber Groups.

23/24 November Berlin (Operation 6).

26/27 November Berlin (Operation 7) with the Halifaxes undertaking a diversionary raid on Stuttgart.

2/3 December Berlin (Operation 8).

7 December Harris sends another controversial memorandum, which attempts to quantify the amount of damage to Germany's urban areas that would force capitulation. He writes this 'would be brought about by the destruction of between 40 per cent and 50 per cent of the principal German towns … by the 1st April 1944 … [when] we should have destroyed 35,750 acres out of a total target area of 89,000 acres (i.e. 40 per cent of the built up areas)'. The Air Staff are unimpressed by such a claim.

16/17 December Berlin (Operation 9) sees high losses owing to active German defences and bad weather in Britain.

20/21 December Operation: Frankfurt-on-Main.

23/24 December Berlin (Operation 10).

29/30 December Berlin (Operation 11).

1944

1/2 January Berlin (Operation 12). A rancorous month begins with considerable disagreement between the Air Ministry and HQ Bomber Command over bombing policy.

2/3 January Berlin (Operation 13).

5/6 January Operation: Stettin, the Baltic port situated close to Berlin.

14 January New directive issued to Bomber Command (and USAAF) stresses first priority is Schweinfurt's ball bearing plants and 'the destruction of those towns associated with the assembly of fighter aircraft, particularly, Leipzig, Brunswick, Gotha and Augsburg'.

14/15 January Operation: Brunswick.

20/21 January Berlin (Operation 14).

21/22 January Operation: Magdeburg. A major row erupts between Harris and the Air Staff over this attack.

27/28 January Berlin (Operation 15).

The calm before the storm: Lancasters of 57 Squadron, based at East Kirkby, await another operation to Germany. (Photo by Plt Off N. S. Clark/ IWM via Getty Images)

28 January New directive issued to Bomber Command (and USAAF) which represents a Direct Order to attack the targets stated in the previous bombing instruction. Attacking Berlin is not ruled out 'when conditions are not suitable' for operations against priority targets.

28/29 January Berlin (Operation 16).

30/31 January Berlin (Operation 17).

15/16 February Berlin (Operation 18).

17 February New directive issued to Bomber Command and US Eighth Air Force ordering a joint assault on Germany's fighter aircraft production (Operation *Argument*). The Battle of Berlin is effectively ended.

19/20 February Operation: Leipzig. 'Big Week' commences and Harris attacks Stuttgart, Schweinfurt and Augsburg to complement American air operations.

4 March Directive on 'Targets for Attack by Bomber Command in Moonlight Periods Prior to *Overlord*', with a particular emphasis on railway objectives in occupied France.

24/25 March Berlin (Operation 19). Last attack on the German capital by Bomber Command's heavy bombers. By this time the US Eighth had finally joined the assault on Germany's capital with five attacks over the previous three weeks. For Harris, American participation in the Battle of Berlin had come too late.

30/31 March Operation: Nuremberg. The grimmest night of Bomber Command's entire war with 95 aircraft lost.

17 April Supreme Allied Commander in Europe General Dwight D. Eisenhower issues directive for Bomber Command and USAAF to undertake pre-*Overlord* air operations.

ATTACKER'S CAPABILITIES

Bomber Command: a true strategic bomber force

Handley Page Halifax Mk II. One of the older versions of this heavy bomber, which suffered dreadful losses through winter 1943/44. After very high losses on the Leipzig raid on 19/20 February 1944, this version, together with the Mk V, was removed from German operations. (Photo by Hulton Archive/ Getty Images)

Prior to September, 1943 had been a year of impressive achievements for RAF Bomber Command. With British aircraft factories churning out ever increasing numbers of four-engined bombers, RAF recruitment and Empire Training Programmes producing a large pool of aircrew personnel, and British technical boffins developing a whole host of aids to help navigation, bombing and bomber protection, Harris had finally taken his force 'over the top' by launching his Main Offensive against Germany in early March. Within six months, his force had laid a path of destruction throughout the Ruhr and also at the major port – and Germany's second city – of Hamburg. In the meantime, other cities throughout Germany had also suffered bomb damage, such as Nuremberg, Munich, Stuttgart, Frankfurt, Kiel and Stettin, while Harris' force had successfully hit the V-2 rocket facility at Peenemünde on 17/18 August. Elsewhere, the summer of 1943 had seen Bomber Command undertake major raids on the Italian cities of Milan, Turin and Genoa, which, in conjunction with the invasion of Sicily, Mussolini's downfall and the Allied landings in southern Italy, had been designed to finally push Italy out of the war. Given this list of achievements, Bomber Command seemed well placed to add to this throughout the late summer and autumn of 1943.

Yet on the threshold of even further success, Bomber Command would experience disappointment. This started, ironically enough, over Berlin, from which it was forced to pull back in early September, and then further setbacks occurred during the Battle of Hanover of late September/October. Hanover showed some worrying weaknesses of Bomber Command as a force, which were not rectified by the time Harris finally decided to re-start the Battle of Berlin in early November. This is not to say that Bomber Command could not do the job. Two raids on targets in the Ruhr, namely Bochum on 29/30 September and Hagen on 1/2 October, had been very successful, with accurate bombing and miniscule losses. This suggests the problems mounted as the distance into Germany increased. Consequently, it was open to debate as to how Bomber Command would perform against a long-distance, very large and well-defended target, such as Berlin.

Planning a raid at Bomber Command Headquarters, High Wycombe. Each day started with 'morning prayers', the conference that reviewed the previous night's operations, listened to the latest weather forecast, and made the decision for that night's target. It was here that Harris took the decision on 18 November to re-launch the Battle of Berlin. The picture shows Harris and his staff examining reconnaissance photographs. (Photo by Leonard McCombe/ Picture Post/Getty Images)

Readiness for Berlin

On the eve of the start of the Battle of Berlin on 23/24 August, Harris' force comprised about 700 aircraft organized in 57 squadrons. This comprised a mix of four- and two-engined bombers: the Lancaster, the Halifax, the Stirling and the Mosquito. While the last aircraft had a crew of two, the heavy bombers had a crew of seven (pilot, flight engineer, navigator, bomb aimer/front gunner, radio operator, mid-upper gunner and rear gunner), though the Stirling sometimes had an additional pilot. At this point, the Vickers Wellington still equipped some RAF squadrons; this twin-engined bomber had been in service since the beginning of the war and remained so until summer 1943. Loved by its crews for its reliability and ruggedness, its bombload had become too small for the strategic bombing role by 1943. It was not used on the three Berlin operations of August/September, and was last used on a raid against a German target on the Hanover operation of 8/9 October. By this time, much bigger machines, which could carry heavier bombloads, had become the norm for Bomber Command.

Born in South Africa, Air Vice-Marshal E. A. B. Rice was the Air Officer Commanding-in-Chief (AOC-in-C) 1 Group. Rice believed in taking the maximum tonnage of bombs to the target. In carrying a heavier load and often being overweight, the Lancasters of 1 Group suffered the heaviest losses of any bomber group during the Battle of Berlin. (© Imperial War Museum, CH 15535)

The most iconic Bomber Command aircraft was, of course, the Avro Lancaster, and this superb aircraft would bear the full brunt of the Battle of Berlin. Overall, 429 Lancasters were lost in the air campaign, or 68.5 per cent of total losses. Famously developed from a flop, the Avro Manchester, and designed by Roy Chadwick, the Lancaster Mk I was powered by four Rolls-Royce Merlin XX engines and had a wingspan of 102ft. With a top speed of 285mph, it had a maximum ceiling of 24,500ft and an impressive range of 1,660 miles – so it could easily get to distant targets such as Berlin, a 950-mile round trip, and even to places such as Königsberg in East Prussia, a 1,500-mile round trip. Defended by eight 0.303in machine-guns in three turrets in the fuselage forward, upper middle and aft, these were considered ineffective against German night-fighters unless the latter was hit by a particularly lucky shot or had come especially close. Above all, it was a true strategic bomber able to take a maximum bombload of 14,000lb in its ever-versatile bomb bay that could carry

all sorts of bombs in every shape and size, all of which contributed to the aircraft's impressive effectiveness. The only weak point was the Mk II, which equipped squadrons of 3 Group only, and was powered by Bristol engines rather than the usual Rolls-Royce or Packard powerplants. This drew a stinging comment from Harris that 'it seems patently absurd to produce far fewer Lancaster Is than could be produced, because the Merlin engines required for Lancaster Is are to be put into useless Halifax aircraft'.

The other success was the de Havilland Mosquito, the 'wooden wonder'. Powered by two Rolls-Royce Merlins, it could carry an impressive bombload, travel at over 400mph, and fly at a maximum altitude of 39,000ft. The Mosquito had a range of 1,370 miles. It was a truly impressive plane, made all the more remarkable by its all-wooden construction – a choice due to the shortage of aircraft metals and the opportunity to use craft-based industrial workers rather than the usual aircraft factory labour force, which was stretched producing other aircraft. It carried no armament – its speed and altitude was its defence and helped ensure its low losses – but it could transport a bombload of 4,000lb, i.e. one 'Cookie' HC bomb, all the way to Berlin. This compared favourably with such planes as the B-17 Flying Fortress. In February 1945, when the Mosquito was regularly bombing the German capital, the Air Ministry made a comparison that stated 'in their recent attack on Berlin the Fortresses with high-explosive (HE) loads carried either ten 500lb bombs or five 1,000lb bombs, that is a load of 5,000lbs. In the big Mosquito raid on Berlin on the 1st/2nd February, excluding those carrying marker bombs, 42 Mosquitoes carried 4,000lb bombs and 57 carried four 500lb bombs'. Becoming operational in May 1942, it was a superb aircraft that conducted target marking, spoof raids and the bombing of Berlin in its work for Bomber Command.

Air Vice-Marshal R. Harrison, the AOC-in-C 3 Group, at his desk in Group Headquarters, Exning, Suffolk. A mixed group of Lancasters and Stirlings, the latter were withdrawn from the campaign against Berlin early on. (© Imperial War Museum, CH 15535)

Elsewhere the aircraft position was less satisfying. The RAF's second heavy bomber was the Handley Page Halifax, which had first become operational in March 1941. Yet the Battle of Berlin came at an awkward moment for the Halifax and Harris consistently condemned its performance during winter 1943/44. At the time it was produced in three versions: the obsolescent models Mk II and V and, from November, the initially disappointing performer of the Mk III, which suffered development problems. The Mk II/V suffered problems from 'flames from the exhaust, faulty undercarriages, and a tendency to go out of control during evasive action', though its speed was improved and its ceiling was always better than that of the Stirling. Nevertheless, Harris wrote, 'as I forecast many months ago the Halifax Marks II and V have gone the same way as the Stirling. I can only use them on short distance, lightly defended targets, and on mine laying, and they are therefore of very little use to me except for training'. Great hopes were placed on the Mk III, which did see improved ceiling and performance, although problems with the air intake and engine carburettors delayed supplies. Nonetheless, on long-range and heavily defended targets, which included not only Berlin but also Leipzig, Frankfurt and Magdeburg, the performance shortcomings of the Halifax were exposed even more, especially the earlier models'

Air Vice-Marshal R. Carr, the AOC-in-C 4 Group (seated) speaking to his senior staff officer. A New Zealander, he commanded an all-Halifax bomber group. (© Imperial War Museum, CH 9316)

Air Vice-Marshal R. A. Cochrane, the air officer commanding 5 Group, photographed in 1954. After the Battle of Berlin, Cochrane would develop his group's own capabilities in target marking and would sometimes operate as an independent force within Bomber Command. From winter 1943/44 Cochrane would clash severely with Bennett over operational matters and techniques. (Photo by John Chillingworth/Picture Post/Getty Images)

lower ceiling of 18,000ft – considered a lethal height for flak – compared to the Lancaster's 24,500ft. The lower ceiling also meant that if confronted with clouds with high tops the Halifax would either have to struggle to climb above them or leave the bomber-stream and the protection of *Window* (chaff) in order to fly around, increasing their vulnerability to fighter attack.

Invariably, the Halifax's operational performance was and has always been compared with that of the Lancaster. Harris himself wrote, 'its low ceiling and short range make it a perpetual embarrassment when planning attacks with the Lancaster'. On 21 December, an investigation was undertaken by HQ Bomber Command which found that Halifax losses exceeded Lancaster losses by 56 per cent, whilst tonnage dropped per attacking aircraft saw the Lancaster exceed the Halifax by 75 per cent. At Harris' request, a meeting with Chief of the Air Staff Marshal of the Royal Air Force Sir Charles Portal and the Air Staff was called the following day, which considered 'the future use of the Halifax in Bomber Command, and how far it was possible or desirable to switch production from the Halifax to the Lancaster'. Backing this idea up was a whole litany of complaints against the Halifax Mk III – 'its inability to get with a reasonable bombload to over 20,000ft' – and its short range, which made attacking Berlin only possible through a very direct approach to the target, and thus forced the accompanying Lancasters to do the same. Consequently, Harris 'would rather have 1 Lancaster than 3 Halifaxes in 1944' because it would never 'approach the Lancaster class'. In this regard, he would be wrong. The Mk III and VI later became excellent aircraft and it is considered that the latter model especially did become a genuine rival to the Lancaster, having an impressive rate of climb, good top speed, and ability to fly at 22,000ft carrying a 14,000lb bombload; however, this only became the case well after the Battle of Berlin. Overall some 6,000 Halifaxes were built. Nonetheless, if hit, the aircrew had a greater chance of survival in a Halifax than in a Lancaster owing to a better internal structure that allowed for a quicker exit from the aircraft. In many ways, the Halifax was the most critical aircraft for Bomber Command as it prepared for, and conducted, the Battle of Berlin. With the Lancaster a known quantity but suffering from production sluggishness and the Stirling scheduled to be withdrawn from operations, how intense and heavy the Berlin operations could be would be governed by the availability of the early versions of the Halifax and the effectiveness of the improvements to the Mk III.

Then there was the Stirling, the first of Britain's four-engined heavy bombers, which had been operational since February 1941. An impressively big aircraft, which made it roomy inside for the crew, it had a length of 87.3ft and a wingspan of 99.1ft, with a top speed of 270mph. But the Stirling had its weaknesses: it tipped the scales at 70,000lb, it had a lethally low ceiling of 17,000ft, a restricted range that could only get to Berlin if by a direct route, an awkward bomb bay that restricted both the carrying capacity and the type of bombs carried, and a difficult undercarriage, which affected landing and taxiing performance. It was also difficult to land and take off. On the ground, it was more time-consuming to maintain, so its serviceability levels lowered dramatically during particularly intense periods of operations. The undercarriage also meant the aircraft sat very high on the ground, which made it perilous for ground crew, especially in icy weather. Cynically, its inclusion on operations to Berlin always brought cheers from Lancaster crews – they felt the lower-ceiling aircraft would get a greater share of the attention from the German air defences. But their cheers did not last for long, as in November 1943 the Stirling was withdrawn from all operations against Germany,

not just those to Berlin. Nonetheless, it was manoeuvrable in flight and remembered fondly by its operating aircrews, and had been in the thick of the Battles of the Ruhr and Hamburg. Stirling squadrons found a second career in special operations duties and glider-towing.

Bomber Command's strength on 18 November, when the Battle of Berlin was re-started, was 950 aircraft. It was an impressive force in many ways, but a lot depended on the Lancaster, given the vulnerability of the other British bombers to the Luftwaffe night-fighters. Yet even here the situation was far from perfect. As related in the next chapter, summer 1943 had seen Lancaster production affected by strikes at the Avro factories in Manchester – all of which meant other aircraft had to be produced and accepted. The Halifax squadrons were still comprised largely of the early versions, while the Mk III had had a troublesome birth, only becoming better and available in larger numbers by February 1944; the Stirlings were increasingly vulnerable and soon withdrawn from German operations; and the Wellingtons were undergoing replacement. With these aircraft deducted from Bomber Command's inventory, the numbers of British heavy bombers looked far less adequate.

Air Vice-Marshal D. C. T. Bennett. He was the air officer commanding 8 Group or the Pathfinder Force (PFF). Originally from Australia, Bennett had a distinguished operational career early in the war, including surviving being shot down in April 1942 after a raid on the *Tirpitz*. His post-war account revealed how gruelling the Battle of Berlin was for the Pathfinder group. (Photo by Bob Landry/The LIFE Picture Collection/Getty Images)

The chain of command and organization

The huge force of Bomber Command was controlled by HQ Bomber Command at High Wycombe. Harris' headquarters was the centre for operational matters and decision-making. Harris was single-minded and determined, qualities that had caused him to be chosen as C-in-C in the first place, but many later noted that Berlin became a fixation with him. He was supported by Air Vice-Marshal Robert Saundby. Before going down the chain of command, it is necessary to state that Harris had superiors, namely the Chief of the Air Staff Marshal of the Royal Air Force Sir Charles Portal. Also among the Air Staff, and who would prove important characters during the Battle of Berlin, were the Deputy Chief of the Air Staff (DCAS) Sir Norman Bottomley, the Assistant Chief of the Air Staff Sir Alec Coryton and the Director of Bomber Operations Air Commodore Sydney Bufton.

Short Stirling Mk III. This was the first of the RAF's four-engined heavy-bombers that first flew operations in early 1941, but its vulnerabilities, especially its dangerously low ceiling, had been exposed by autumn 1943. The aircraft was removed from missions over Germany after the Berlin operation of 22/23 November 1943. (Photo by Fox Photos/Getty Images)

Handley Page Halifax Mk III. Considered to be one of the better versions of this bomber, this aircraft became operational during the later stages of the Battle of Berlin. (Photo by Charles E. Brown/Royal Air Force Museum/Getty Images)

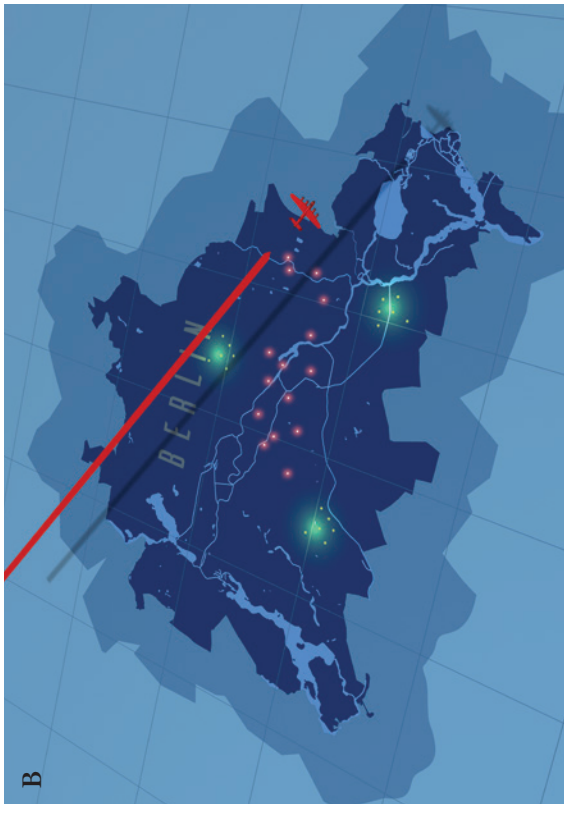
The civil head of the RAF was the Secretary of State for Air, Sir Archibald Sinclair. Below the HQ, Bomber Command was decentralized into Bomber Groups: 1, 3, 4, 5 and 6 being the Main Force groups and 8 Group being the Pathfinder Force (PFF). 6 Group was the group of the Royal Canadian Air Force while 8 Group was a vital component of Bomber Command for the Main Force squadrons depended on the PFF crews for navigation to the target and for target-marking. The Pathfinders would suffer grievous losses of experienced crews over Berlin, especially during January 1944, and this led to replacements who were inexperienced and not qualified to operate H2S radar over Berlin. The other important group was 100 Group (Bomber Support), which undertook *Intruder* operations against German night-fighter bases, especially in Holland. They developed and operated Radio Counter-Measures (RCM) and carried a considerable amount of jamming and radar homing equipment against the Luftwaffe night-fighters. The group was under the command of Air Vice-Marshal E. B. Addison, and operated the Beaufighter and Mosquito. The Battle of Berlin would test all the bomber groups but especially the Pathfinders, which would suffer considerable losses during January 1944. Each group controlled an area that contained between 9 and 12 airfields. On each airfield squadrons were divided into two – sometimes three – flights.

Technology

There were two key questions that needed answering if Bomber Command was to achieve success in the Battle of Berlin. First, could it mark the target accurately and concentrate the bombing effort; and second, could it keep the Luftwaffe at bay and maintain a loss rate of below 5 per cent? The issue of bombing navigation and accuracy had bedevilled bomber operations right from 1939 and, in an attempt to improve this, led to the creation of the PFF in mid-1942. But there were also devices that had helped improve Bomber Command's accuracy. The first was *Oboe*, which was used by high-flying Mosquitos, and the most accurate means of blind bombing so far devised, but it was limited geographically and it could not reach Berlin owing to the curvature of the earth. The second technical gadget was H2S, which was a ground-echoing radar carried in the aircraft. Effective over small cities and against ports, such as Hamburg, because of the sharp contrast between land and sea, H2S was

OPPOSITE PATHFINDER TARGET-MARKING TECHNIQUE: THE 'BERLIN METHOD'

A: The Pathfinder Lancaster drops some 'primary' target indicator markers that burn green on the ground. On the ground, the clusters of green TIs dropped by different aircraft are spaced quite widely due to inaccuracy of H2S over Berlin.
B: Another Lancaster drops a cluster of red 'secondary' TIs, aiming for the middle of the green markers. The idea is that the average will be most accurate.
C: Another Lancaster drops parachute flares. Only a few are visible; they float above the cloud, burning bright yellow/white.
D: All three types of marker are burning. The main force of bombers drops bombs onto a location between the white parachute flares and the red 'secondary' ground flares. This was hardly a marking technique that could deliver concentrated and accurate bombing results.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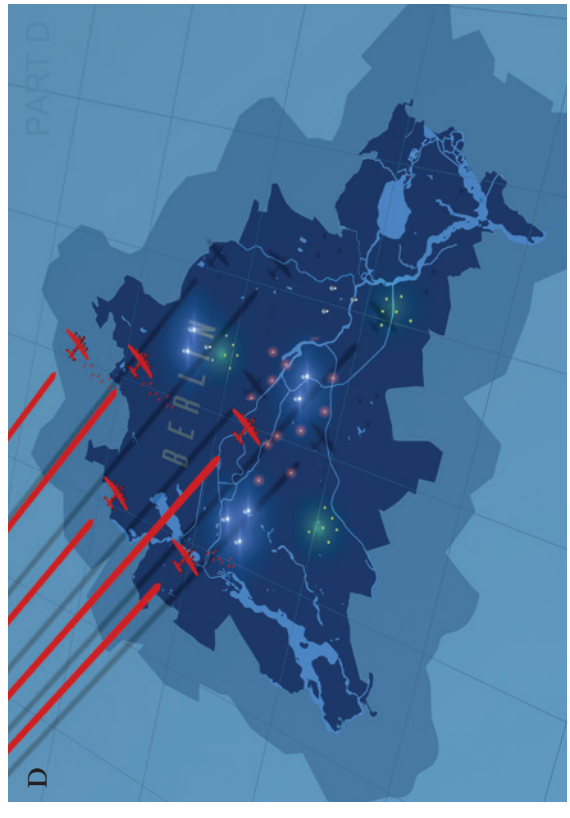
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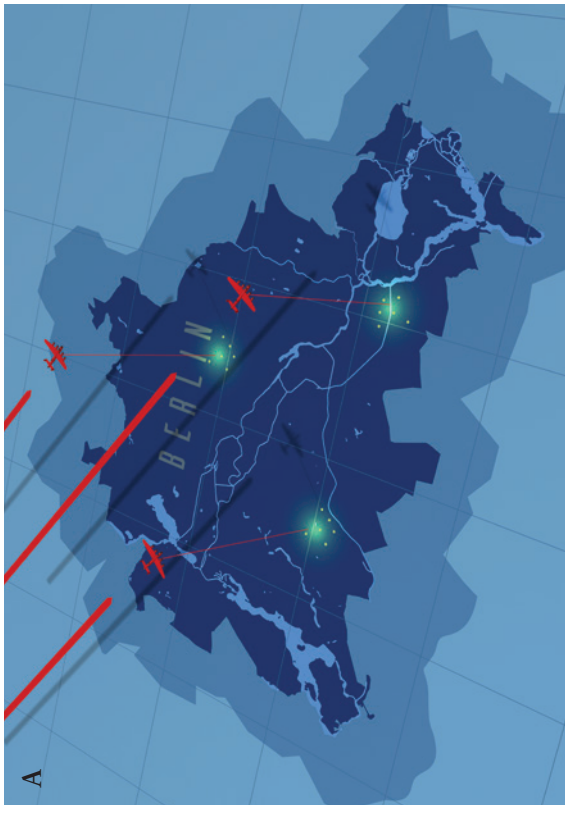
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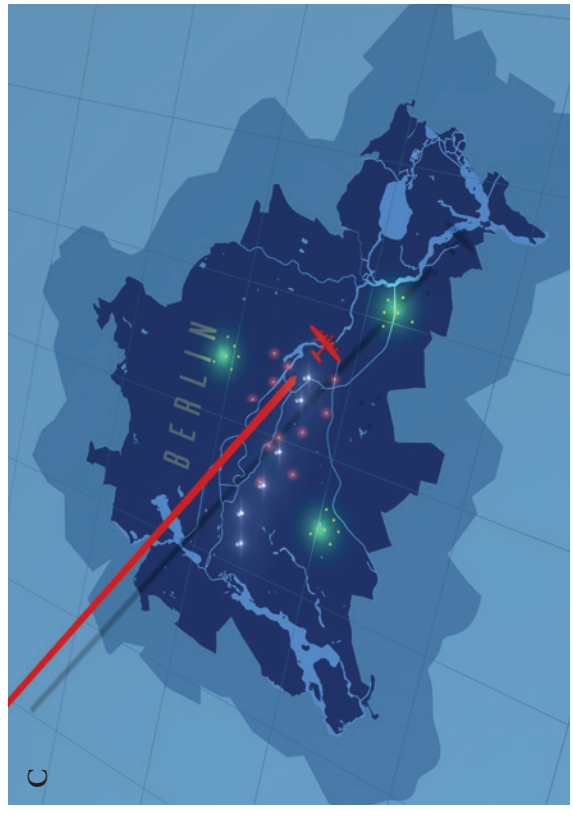
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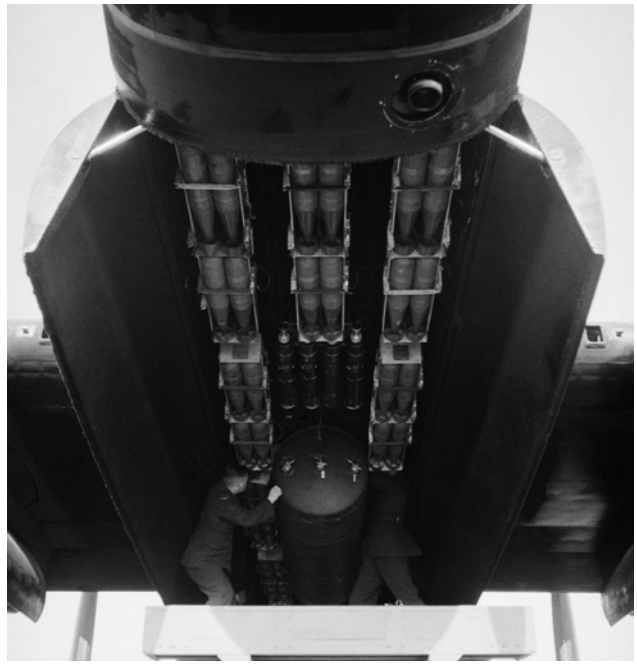
Avro Lancaster Mk I. The iconic British bomber of World War II, the Battle of Berlin was still a supreme test for this aircraft. Though its excellent capabilities meant a heavy bombload could be taken the long distance to the German capital, some 429 aircraft were still lost on the 19 operations to Berlin. (Photo by Hulton Archive/Getty Images)

more problematic the further inland it went. It became imprecise and difficult to decipher over built-up areas. There were high hopes for H2S over Berlin in August 1943 after the experience over Hamburg, but Berlin was simply too big and filled the H2S screen, making any distinction impossible. However, Harris had little alternative but to persist with trying to make H2S work, given that Berlin lay beyond the range of the electronic navigation and bombing system of *Oboe* or the radio navigation system, increasingly susceptible to German jamming, of *Gee*. Consequently, 'blind marking' on H2S was seen as the way to mark targets during the Battle of Berlin, which was asking a lot of this equipment. And the definition of Berlin under the new H2S Mk III, which Harris had eagerly awaited before recommencing the offensive against the German capital, proved little better than the original Mk II set. The alternative was to mark the target using the *Newhaven* technique – laying masses of flares to allow visual identification of the aiming point – but this technique required good visibility both for the Pathfinders and the Main Force, and such conditions were scarcely ever seen over Berlin during autumn and winter.

The de Havilland Mosquito – the 'wooden wonder' – and the unsung hero of Bomber Command during World War II. This aircraft marked targets and conducted feint attacks during the Battle of Berlin, often from high altitude. It would later conduct a continuous campaign against the German capital in spring 1945. (Photo by Charles E. Brown/Royal Air Force Museum/Getty Images)

In terms of the second issue, that of neutralizing the Luftwaffe, the Battle of Berlin proved to be a war of electronics between Bomber Command and the Luftwaffe. In particular, the British made significant improvements in RCM throughout 1943 and these various methods would be brought together against the German defences in the Battle of Berlin. The older countermeasures of airborne and ground-based *Mandrel* to jam the frequencies of *Freya* – a ground-based early warning radar – and the British electronic device called *Tinsel* to jam German High Frequency Radio Transmitters (HF/RT) were still in use. Above all, it was *Window* that had become the principal countermeasure to enemy radar and was dropped by the whole bomber force. The use of *Window* for decoy purposes had been rapidly expanded since its

introduction in July 1943 and major raids would be usually accompanied by one or more decoy attacks by Mosquitoes. 101 Squadron operated *Airborne Cigar* (ABC), in which Lancasters were fitted with jamming equipment and had an eighth crew member – a German speaker – who listened to enemy radio instructions to the night-fighters and jammed their frequency using a VHF transmitter. ABC Lancasters would fly throughout the bomber-stream and would represent a continual problem for the Luftwaffe. *Ground Cigar* did a similar thing to jam VHF/RT. Then there was *Corona*, which involved the transmission of fake instructions – such as the order to land because of fog – to interfere with the running commentary of night-fighters by a German-speaking operator from a radio station in Kent. Both these RCM would be introduced in October and would be used throughout the Berlin campaign. Two new measures, *Dartboard* and *Drumstick*, would be introduced in December 1943 and January 1944 respectively. The first was to jam the high-powered transmitter at Stuttgart, which was used by the Germans to transmit a running commentary when their original transmitters were jammed by Corona. The second was to counter wireless transmissions which were resorted to by the enemy controllers when RT communication was jammed.



A Lancaster bomb bay with canisters of 30lb incendiary bombs and a 4,000lb HC bomb. Throughout the war, Bomber Command dropped millions of incendiaries on Germany, with fire being used to destroy entire urban areas. The most infamous fire raids were against Lübeck (March 1942) and Hamburg (July 1943). Because of the city's modern concrete construction and the blast damage from previous attacks that had created fire breaks, the use of incendiaries was less successful against Berlin. (Photo by Flt Off B. J. Daventry/ IWM via Getty Images)

To hunt night-fighters more aggressively, 141 Squadron of 100 Group developed a device called *Serrate* that homed in on the electronic emissions from German night-fighters using the *Lichtenstein* radar device. These so-called *Intruder* operations first took place on 16/17 December 1943 and would do much to erode the German night-fighters, particularly among the elite Nachtjagdgeschwader 1 (NJG-1) that was based in the Low Countries. 100 Group would also deploy other devices such as *Mandrel*, which was used for jamming the Germans' early-warning radar. Such were the technical devices the British had to develop in order to counter the increasingly assertive Luftwaffe. Yet in this 'electronics war' with the Germans, it was not all good news for the British. Evidence increasingly accrued that the more devices carried by British bombers, the more like 'beacons' they became for the Germans, who developed the ability to home in on H2S emissions and thereby identify the bomber-stream's location behind the *Window* screen. Night-fighters could also do the same to other devices such as *Monica* (a warning device of an aircraft approaching the bomber from behind and below) and *Fishpond* (a fighter warning radar added on to H2S).

Tactics

Ultimately, the planning and technology of Bomber Command was designed to achieve a simple formula, namely getting to the target, marking the target, and destroying the target. Though seemingly straightforward tasks, in reality these were far from being so, and each element had its difficulties. Routeing carried the danger of detection and becoming predictable if repeatedly used. It was therefore necessary to make routeing a vital part of deceiving the German air defences, and this involved either deceptive routeing or 'split-attacks', which made Bomber Command's operations increasingly complex by early 1944. The Mosquitos flew 'spoof-raids', in which they dropped fake fighter-flares and route-markers to draw German night-fighters away from the bomber-stream, while

A Lancaster rear turret complete with four .303 Vickers machine-guns. The rear gunner, alone at the back of the plane, was always vulnerable to German night-fighter attack. He defended his aircraft in two ways: firstly, on seeing an enemy fighter he could tell the pilot over the intercom, who would throw the aircraft into a violent evasive manoeuvre. Secondly, he could fire back, but the .303in guns were generally considered inadequate against German night-fighters. (Photo by Flt Off Forward/IWM via Getty Images)

also dropping *Window* and target indicators (TIs) and 4,000lb bombs to simulate the opening of a main attack. In keeping the German defenders confused, the main operation would also be supported by the Halifaxes and Stirlings flying mining operations off the Dutch or German coast, while Operational Training Units (OTU) and Heavy Conversion Units (HCU) crews flew *Bullseye* training flights over the North Sea, all designed to draw German night-fighters away from the outbound route of the main bombing force.

Routeing also affected the bombload delivered – a more direct route allowed more bombs to be carried (and, usually, allowed the Halifaxes to be involved). Indeed, the heavy bombload (2,500 tons) carried by the maximum effort on 22/23 November would not be achieved until mid-February because the Luftwaffe's improving tactics meant circuitous routes. Once at the target the problem became of marking effectively. Because of the weather, target-marking was extremely difficult, but the Pathfinders developed the 'Berlin Method'. This involved a barrage of sky markers and ground markers that would be dropped throughout the attack and Main Force crews were instructed to bomb the TIs if they could be seen, and on the Wanganui (sky markers) if not. This target-marking effort would generally lead to mixed results during the Battle of Berlin; bombing on sky markers, which drifted in the wind, would never be as accurate as ground markers.

Destroying the target involved the standard load for Bomber Command during an area attack, which was a mixture of HE and incendiary bombs. The British produced three types of HE bomb, namely the General Purpose (GP), Medium Capacity (MC), and High Capacity (HC). Within these categories the most common were the GP bombs of 500lb and 1,000lb, the HC bomb of 4,000lb and the MC bomb of 1,000lb, together

A navigator of Bomber Command adjusting the H2S radar set. This could tell the difference between land and sea, and also the countryside and urban areas of smaller German cities. The sheer size of Berlin's built-up areas negated the effect of H2S, however. (© Imperial War Museum, E(MOS) 1436)

Badge of the Pathfinder Force. The Battle of Berlin took its toll on the crews of 8 Group. Losing experienced crews, it remains a moot point as to whether the standard of target marking reduced as the campaign against Berlin carried on. (© Imperial War Museum, INS 7323)

with packs of 4lb incendiaries. However, evidence suggests that not all bombs arrived at Berlin. Some evidence suggests that overloaded Lancasters jettisoned their 4,000lb in the North Sea to increase the aircraft's speed and ceiling, which caused HQ Bomber Command to order the re-working of the bomb-aimer's photograph to operate when the big bomb was released.

Tactically, on an operation the bomber's best defence was evasion. Yet if a bomber was attacked by a fighter, then there was only one option. Gunners were often under orders never to open fire unless attacked from very closely quarters. All British heavy bombers suffered from the inadequacy of their .303in machine guns in the front, mid-upper and rear turrets, which were no match for German aircraft that had armour over critical places and heavier machine guns and cannon. Instead the 'corkscrew' manoeuvre was used, which involved diving to one side and then pulling up, before turning to the other side, then when level starting another dive; this would be carried on until the night-fighter was shaken off. One account relates how a particular German night-fighter ace followed a corkscrewing Lancaster bomber for three-quarters of an hour without once being able to get into a firing position.

Finally there was the issue of personnel. Bomber Command aircrew were certainly well trained, with a pilot taking two years on average to go from raw recruit to bomber captain. Yet there is evidence to suggest that many crews had become weary and worn down by operational strain by Christmas 1943, and groans were heard when Berlin was announced 'as the target for tonight'. Frustration over progress (it was impossible to gauge the damage to Berlin) affected morale. Former aircrew recall that the mood on RAF stations became subdued, and 'Early Returns' (ER) were sometimes seen as an indicator of this. Some, such as the air officer commanding 8 Group (Pathfinder Force) Air Vice-Marshal Sir Donald Bennett, even charged that slipping morale compromised the 'press-on' spirit. In spring 1944 he wrote 'there can be no doubt that a very large number of crews failed to carry out their attacks during the Battle of Berlin in their customary determined manner … I feel quite sure in my own mind that many bombs were wasted *en route* in an effort to increase aircraft performance and that, unfortunately, the Command suffered from many "fringe merchants"'. The Official History states that 'In the Battle of Berlin, Bomber Command endangered its morale by pressing the attacks to the point to which the results achieved did not compensate for the losses sustained'. Nevertheless, many airmen kept on going; few wanted to be on a charge of LMF (Lack of Moral Fibre).

DEFENDER'S CAPABILITIES

Luftwaffe air defences: recovery and zenith

The Junkers Ju 88, a versatile aircraft that had been used as a bomber in the campaigns against Britain (1940) and Russia (after June 1941). By winter 1943/44 it formed the backbone of the German night-fighter force. (Photo by Sobotta/ullstein bild via Getty Images)

For the Luftwaffe, the outcome of the Battle of Berlin hinged on its ability to track, locate and intercept the British bomber-stream. Yet mid-1943 onwards brought major changes as to how this was to be achieved. Just as the British were engaged in technological development to deliver the bombs more accurately on Berlin, so the Germans would also be engaged in this 'electronics war' in order to outwit British tactics and, ultimately, to make the continuation of long-range attacks on German simply too expensive for the RAF. Just like the British, this period would also be a time of new tactics for the Germans – both in terms of intercepting the bomber-stream and shooting down the aircraft. The tit-for-tat battle taking place between the RAF's tactical and technical innovations and the Luftwaffe's countermeasures therefore began in earnest throughout the summer and autumn of 1943. It would remain to be seen which would get the upper hand in the air campaign over Germany during winter 1943/44.

The Luftwaffe had, of course, been at the forefront of Blitzkrieg warfare in 1940 and 1941. Airpower was primarily to be used tactically in support of ground forces on the battlefield. Summer 1940 showed this to be an unbeatable combination. By mid-1943, however, the role of the Luftwaffe had changed: although it still used tactical bombers, especially in Russia, an overwhelmingly large proportion of its force was dedicated to the air-defence role, both in the day and at night. Though flak and searchlights were the most visible of the German air defences, the most effective in shooting down British bombers were the often unseen night-fighters. Indeed, during the campaign of 1943/44 the night-fighter squadrons (*Nachtjagdgeschwader* or NJG) claimed about 75 per cent of British bomber losses and would have some very rewarding evenings from January to March 1944 – the period when the Luftwaffe night-fighter force was at its zenith. Their inflicting of high losses even affected British decision-making: this was one reason, amongst others, as to why Harris paused the Battle of Berlin in mid-September 1943 and called it off in mid-February 1944. Nonetheless, it would be wrong to depict the Germans as not having any troubles of their own: they had no purpose-built night-fighter; their existing aircraft – apart from the Junkers Ju 88 – had defects

as night-fighters; their pilots also suffered combat strain; they were overstretched on many fronts; they could not resolve a critical debate on aircraft production between fighters or bombers; and, perhaps of most immediate critical importance, late July 1943 had seen their night air defence system become completely invalidated by the British countermeasure of *Window*. The latter meant a quick tactical and technical recovery was imperative: this was the Germans' big problem during the first half of the Battle of Berlin but would reap incredible dividends in the second.

Colonel-General Günther Korten, the Luftwaffe's Chief of Staff. He died from injuries sustained during the bomb plot against Hitler in July 1944. (Photo by ullstein bild/ullstein bild via Getty Images)

Night-fighter organization

At the head of the Luftwaffe stood the massive figure of Reichsmarschall Hermann Göring; ambitious, vain, and corrupt, he had become the second most powerful man in the Third Reich owing to the accumulation of a 'personal empire' of roles, of which the Luftwaffe was part. Yet Göring found his power waning by 1943 due to Hitler's perception of failures of the Luftwaffe, especially its inability to resupply the beleaguered German garrison at Stalingrad and thwart the Anglo-American bombing attacks on Germany. Generalfeldmarschall Erhard Milch was Director-General of Equipment and responsible for aircraft production. The Luftwaffe's Chief of Staff was General Hans Jeschonnek, but after he committed suicide on 18 August 1943 he was replaced by Major-General Günther Korten, who would die due to injuries sustained in the assassination attempt against Hitler in July 1944. Generalleutnant Joseph Schmid commanded the 1st Fighter Corps. General Josef Kammhuber was responsible for the air defence of the Reich but was transferred to command Luftflotte 5, based in Norway, in November 1943.

In terms of organization, just as the British had organized their aircraft into bomber groups, the German night-fighters were organized into *Nachtjagdgeschwader* that contained between 30 and 50 aircraft. These were sub-divided into three or four *Gruppen* that had its own airfield. In total, by summer 1943, there were six night-fighter squadrons: NJG-1, considered an elite unit, was based in the Low Countries and led by Oberst Werner Streib; NJG-2, after having been almost destroyed in the Mediterranean, was being reformed in Holland but would be successful later in the battle, especially on the night of 24/25 March, and commanded by Oberstleutnant Karl Hülshoff; NJG-3 was under Oberst Helmut Lent and covered north-west Germany and Denmark; NJG-4 was based in northern France and Belgium, and led by Major Rudolf Stoltenhoff; NJG-5, commanded by Oberst Günther Radusch, was newly formed and had the critical role of Berlin's air-defence; and NJG-6 was under Major Fritz Schaffer but not yet fully operational as it was still being formed in southern Germany. This was the German Order of Battle that would come to inflict so much damage on Bomber Command during winter 1943/44.

German aircraft

The German fighters that would face the British bombers were a whole amalgam of different types. The absence of a purpose-built night-fighter in large quantities meant that existing aircraft within the Luftwaffe's inventory were pressed into night-fighter service, though

Major Hajo Herrmann, commander of the NJG-1 and leading figure behind the Luftwaffe's adoption of 'Wild Boar' tactics. (Photo by ullstein bild/ullstein bild via Getty Images)

weighed down by the technology required for undertaking this role. The standard types of the night-fighter force were two twin-engined aircraft. The first was the Messerschmitt Bf 110. This aircraft, designated a heavy fighter/fighter-bomber, had proved a considerable disappointment during the Battle of Britain but had been given a new lease of life in the night-fighter role. Though manoeuvrable in combat and carrying a lethal array of firepower the type had its weaknesses, the main ones being its speed (due to the weight of modifications needed for the night-fighter role), its slow rate of climb which meant that it could catch an unloaded Lancaster only very slowly, and its limited range. Far better was the Junkers Ju 88, which despite being originally designed as a fast, multi-role bomber, seemed particularly suited for night operations; its fuselage could carry a long-range fuel load, the equipment of SN-2 radar and the upward-firing cannons called Schräge Musik, which would prove a deadly combination and especially suited to 'Tame Boar' operations. The extra night-fighting equipment would weigh down the earlier versions of the Ju 88 (R-2 and C-6), but the updated G-1 and G-6 models were being produced and they would become the backbone of the *Nachtjagdgeschwader* from January 1944.

A much less suitable aircraft was the Dornier Do 217, a modified bomber, which was being superseded by other aircraft during this time. There was a purpose-built night-fighter, the Heinkel He 219, which was designed precisely for the ground-controlled night-fighter role, but the strain on German aircraft production – worsened by American daylight attacks on the factories – meant it was being produced very slowly and would have little bearing on the Battle of Berlin (though the ace Hauptmann Manfred Meurer would be killed flying one in a collision with a Lancaster on the night of 21/22 January 1944). Probably one of the most unusual German aircraft that was sometimes seen by British aircrews was the Focke-Wulf Fw 200 Condor, by type a long-range maritime reconnaissance aircraft, which was often used to lay flares that marked the whereabouts of the British bomber-stream. In the night-fighting role called 'freelancing' were two single-engined

The Messerschmitt Bf 109 was the iconic German fighter of World War II, especially during the early Blitzkrieg campaigns in Western Europe, as pictured here. By late 1943 it was also being used as a 'Wild Boar' night-fighter against RAF Bomber Command. (Photo by Keystone-France/ Gamma-Keystone via Getty Images)

The Messerschmitt Bf 110. Generally considered not to have been a success in the heavy fighter-bomber role, it would suffer the ignominy of having to be escorted by Bf 109s during the Battle of Britain. Nonetheless, it found a new lease of life as a night-fighter by 1943. (Photo by Keystone/Getty Images)

types, the long-established Messerschmitt Bf 109 and Focke-Wulf Fw 190, which would initially prove successful against the British bombers during the first part of the Battle of Berlin.

Clear about the need to strengthen the Reich's air defences, Korten wanted fighter production to be the priority, but this request took place against the background of a considerable debate in Germany of whether to arm for attack or defence, which had, of course, an enormous impact on the priorities of aircraft production. Should there be a concentration on bombers or fighters? The key figure in all of this was, of course, Hitler himself, who refused to believe that Germany was on the defensive in the air (and on land) by 1943 and thus wanted bombers (and V-weapons) to remain the priority. Aware of his slipping status, and seldom wanting to challenge Hitler directly, Göring would do little to change this. Moreover, Hitler and Göring both refused to believe that the Allies were producing so many heavy bombers and that a correspondingly stronger German fighter defence was needed. This view, which meant a low priority for air defence, carried important implications: from July to December 1943 German fighter aircraft production had stagnated. But it was not just about production; it was also a case of building the right type. What was being produced were the obsolescent and increasingly ineffectual aircraft, namely the Bf 110 and Do 217.

As a result, the Germans remained slow in producing the genuine night-fighter, the He 219, which, though requiring a long runway, was a capable machine, able even to tackle the troublesome British Mosquito and, crucially, was a single-purpose aircraft that would not be siphoned off to another branch of the Luftwaffe (as had happened to the Me 410, which Göring had taken from its fighter role and turned into a fighter-bomber). The Germans were also slow to produce the specialist night-fighter equipment – such as SN-2 radar and *Naxos* – that was increasingly making all the difference in intercepting the British bombers, and only started to produce more of these devices from January 1944 after Schmid had placed an urgent request. These issues came at an important time, and if the Luftwaffe was going to beat Bomber Command in the Battle of Berlin then it needed to produce better aircraft and technology quickly. The bomber versus fighter debate, coupled with a fragmented aircraft industry producing too many different types (with a good number outdated), needed urgent resolution, but Göring was incapable of doing this.

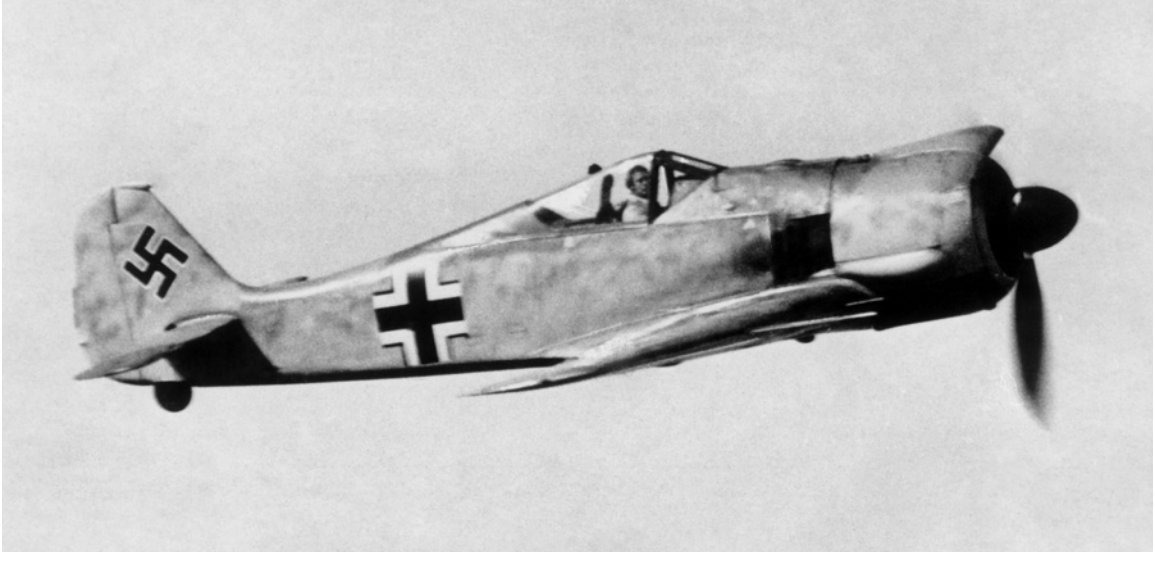
The irony is that Allied intelligence thought the opposite about German aircraft production. On 4 November 1943 – the day after Harris' memorandum to Churchill about winning the

war by destroying Berlin – Portal received fresh intelligence that stated the Luftwaffe would have 1,700 fighters by April 1944. Such news, as will be shown, was a major reason for the Air Staff forcing Harris to switch from Berlin to German aircraft production and ball-bearing targets to fulfil the Pointblank Directive in preparation for *Overlord*.

Innovations: the Kammhuber Line to 'Tame Boar' and 'Wild Boar'

On 23/24 July 1943 the British bombed Hamburg. Alongside the usual markers and bombs being dropped by the British was a thin metal strip called *Window*. This was a game changer, at least in the short to medium term, in the contest between Bomber Command and the Luftwaffe's air defences. For *Window* had blocked many of the technical devices in Germany's Kammhuber Line air defences, such as the *Freya* and *Würzburg* ground radars and the night-fighters' airborne radar (*Lichtenstein*). The fluttering metal clouds provided a mass of unintelligible signals on German radar screens and the ability to plot the course of the bomber-stream was only obscured. As a result, ground-controlled box-patrolling (a procedure known as *Himmelbett*) was ditched. The British official history comments that 'Kammhuber's line, on which untold industrial and military effort had been spent, became an expensive and useless luxury overnight, and it became necessary to reorganise the whole system of night fighter defence'.

In the wake of this, the Germans reverted to 'freelance' night-fighters – not under ground control – in a tactic called 'Wild Boar' ('Wilde Sau'). This was the idea of Major Hajo Herrmann, an ex-bomber pilot, who would personally command the unit Jagdgeschwader 300 (JG 300). In late 1943 two new units, JG 301 and JG 302, were formed and all single-engined fighters (about 100 aircraft) were concentrated into a new command, Jagddivision 30, directly under the operational control of the newly formed Luftflotte Reich. Until technical advances could overcome *Window*, the Germans were forced to adopt the only night-fighting tactic they could, so Wild Boar became the standard method for both single-engined and twin-engined fighters. Pilots would use the various illuminations within the target area, such as the PFF's target indicators, the fires from the attack itself and the searchlights, rather than relying on ground control and airborne radar, to find the bombers. Local flak units also co-operated by restricting the height of their gunfire, thus allowing the Wild Boar pilots to operate over the target without the danger of 'friendly fire'. Wild Boar made use of the Luftwaffe's single-engined fighters, namely the Fw 190 and Bf 109, and also



Focke-Wulf Fw 190. Designed by Kurt Tank and operational from summer 1941, this aircraft became a successful night- as well as day-fighter single-engined interceptor. (Photo by ullstein bild/ullstein bild via Getty Images)

Focke-Wulf Fw 200 Condor. Originally designed as a civil airliner, the Condor was further developed for military purposes as a long-distance maritime reconnaissance/anti-shipping bomber aircraft. Some RAF aircrews reported seeing it operating in a night-time interceptor role during the 26/27 November 1943 operation against Berlin and Stuttgart. (Photo by ullstein bild/ullstein bild via Getty Images)

surplus bomber pilots. Twin-engined fighters were hastily pushed into Wild Boar service – a far cry from what they had been trained to do – and the tactical shift was not popular with their crews, for they now had to fly all over Germany to radio beacons in all sorts of weather conditions to engage bombers visually within the 'hot' target zone. But it had an upside: all night-fighter pilots would now become involved, even junior ones, rather than only the experienced crews undertaking the box-patrolling of the Kammhuber Line.

For all the talk of *Window* defeating the Luftwaffe at the Battle of Hamburg, the Wild Boar fighters would be successful. Wild Boar attack was pioneered on the Cologne operation on 3/4 July, where it claimed 12 aircraft. It was first used on a large-scale on the Peenemünde raid on 17/18 August, with 213 night-fighters being deployed. Despite the target having initially been identified as Berlin, once this was corrected, this huge number of fighters caught and tore into the last waves of the British bombers. The Wild Boar system was further improved by installing visual and radio beacons around which the night-fighters could congregate, while the precise direction of a British attack was being plotted, before more precise information as to the location of the British bomber-stream was then given by the running commentary. Consequently, by the time of the opening of the Battle of Berlin this new system of night-fighter defence, which completely got around the fundamental point of *Window*, was being established as the standard tactic of the Luftwaffe. As Harris himself admitted, 'the fighter defence had been reorganised and strongly reinforced'. And it did work. Wild Boar fighters were pulled to the beacons from as far away as France and Denmark, and it is this mass of fighters that contributed to the high losses on these attacks, which Harris felt his command could not afford. The risk of concentrating the bulk of the Luftwaffe's night-fighters was worth taking for the dividend it yielded when things went right. The Germans, en masse, could catch the bombers over the target and it would yield many kills. Indeed the 58 aircraft lost on the opening attack of the Battle of Berlin (23/24 August) – just four weeks after the *Window* setback – was a testimony to how effective this method was and it quickly brought the British casualty rate back to the average figure experienced during the earlier Battle of the Ruhr.

The *Lichtenstein* SN-2 radar was fitted to the Luftwaffe's twin-engined night-fighters. (© Imperial War Museum, CL 3299)

Yet the new system was not problem free. There was a reservation as to how German night-fighter pilots would perform under the new system, be they trained for the old box-system or wholly inexperienced. Under this system, these personnel now had to fly all over Germany, often in terrible weather conditions. More importantly, by concentrating their waiting fighters in one place and then guiding them to the target once it was known, the Germans could be fooled by the RAF's counter-tactics, namely 'split attacks' and 'spoof raids', and the use of the *Mandrel* airborne jamming screen. Indeed, a German mistake on the 5/6 September raid on Mannheim brought this tactical possibility to the attention of HQ Bomber Command, as the night-fighters were sent to the south believing the British raid was on Nuremberg. Needless to say, the British soon implemented this countermeasure to capitalize on this vulnerability. The intention – and frequently the result – was to send the enemy to the wrong area at the same time, not allowing him sufficient time to reach the real target in large numbers. This came too late to prevent the Battle of Berlin being called off, and it was on 22/23 September – when the Battle of Hanover began – that the British first introduced the diversionary attack (to Oldenburg). This tactic did help the British, especially as by October they had successfully mapped the location of all the German assembly beacons (from documents received from a Belgian agent of the SIS who had taken them from the pilot of a crashed night-fighter).

Consequently, the effectiveness of Wild Boar lessened as 1943 carried on. But, in turn, the Germans shifted to new tactics that invalidated the British deception measures. Initially, the Luftwaffe decided to reduce the possibility of British diversionary attacks and evasive routeing by intercepting the bomber-stream much further out along the French, Dutch and Danish coasts, and even over the North Sea. But most important was the formal switch of tactics away from Wild Boar to 'Tame Boar' ('Zahme Sau'), and this quickly became the dominant Luftwaffe night-fighter tactic in the second half of the Battle of Berlin, achieving a high level of success. The tactic of Tame Boar had been discussed at a high-level Luftwaffe conference as early as 29 July 1943. But *Window* had blocked their existing airborne-radar (*Lichtenstein*), on which this tactic so critically depended, so Tame Boar had to be left in abeyance until the arrival of sufficient numbers of the new *Lichtenstein* airborne radar set, the SN-2. This version operated on a different frequency from its predecessor, and could not be jammed because the British still used the older set's frequency. Many twin-engined aircraft became equipped with it by the beginning of 1944 and these units were then released from Wild Boar operations. The Luftwaffe had recovered from *Window* and, in doing so, would reach a zenith in early 1944 that allowed it to defeat Bomber Command.

Tame Boar involved the twin-engined night-fighters being guided to the bomber-stream along its outbound and inbound routes. Though SN-2 was vital, the method also utilized several other technical devices:

1. Firstly, a ground-based radar called *Korfu* allowed German controllers to track and plot the direction of the British bomber-stream. This meant there was less need to identify the final target; what was important was locating clearly where the bomber-stream was. This early-warning system was the most important measure, in conjunction with the running commentary, in facilitating the Tame Boar method for large-scale interceptions along the bombers' routes from January 1944. Route interception, which could happen as early as the North Sea and at any point throughout the

continent, was a much more difficult tactic for Bomber Command to counter than Wild Boar. Moreover, the Luftwaffe's widespread bases enabled night-fighters to converge on the bomber-stream from all directions in force.

2. An airborne device called *Naxos* homed in on the British bombers' H2S signals – this betrayed whether this was a major attack (the British only used H2S on such raids) or a diversion. From the ground the Flensburg apparatus homed in on the bombers' device called *Monica*. Both these devices were developed to assist the night-fighters in finding the bomber-stream.
3. Experienced night-fighter pilots sometimes used a beam-guided system called Y-Gerät ('Y-device') in order to lead other night-fighters to the right area.
4. German developments in radio allowed the running commentary on the attack to be broadcast, often on multiple radio channels, and for night-fighter crews to be directed to the right place, be it a holding beacon or the route itself, often from long distances and in bad weather. The Germans played music over the radio stations to indicate instructions to night-fighters or the target being attacked (Berlin – waltz; Leipzig – accordion).
5. A night-fighter carrying a device called *Benito*, which had got into the bomber-stream, would then emit a signal that allowed other fighters to home in. Then the night-fighter's own radar, fighter flares – and simply the bumps of a slipstream – would indicate the bomber-stream was near.
6. Finally, once locked on to a bomber, the Germans would use either their newly installed heavy armament, be it the 30mm forward cannon or the 20mm upward-firing cannons (that used dim tracer), and the interception tactic of attacking from underneath and to one side, which Bomber Command did not ascertain for months, to ignite the British aircraft's fuel tanks with devastating effect.

A powerful German searchlight. No British bomber wanted to be held in the cone of the many searchlights that surrounded all German cities but were particularly intense over Berlin. (Photo by Max Ehlert/ullstein bild via Getty Images)

Overall, the Germans had developed all-encompassing tactics for attacking the bomber-stream for much longer. Tame Boar was perfect for following the routes of the compact bomber-stream all heading to the same target in the same direction. Over the target, the single-engined Wild Boar aircraft, in conjunction with flak, would then attack. Tame Boar night-fighters, meanwhile, would wait for the bombers to clear the target area before resuming their attacks. And, just for good measure, the old box-system was still patrolled by German aircraft in Holland – the route into and out of Continental Europe that Bomber Command used far too frequently – in order to shoot down any stragglers or damaged aircraft. This allowed the entire German night-fighter force to be used against Bomber Command and was a real contrast to the old Kammhuber Line, in which experienced elite crews often monopolized the box-system, to the detriment of others.

Ironically, the introduction of *Window* – seemingly so paralyzing to the German defenders – had led to technical and tactical

OPPOSITE GERMAN FLAK GUNS AND ATTACK METHODS

Ceilings of light and heavy flak guns:
Many British airmen remarked on the lethality of German flak defences. These comprised AA guns of all sizes that covered a variety of heights. The heavy flak guns comprised the 8.8cm (the infamous '88s'), 10.5cm, 12.8cm, and the giant 15cm versions. The light flak guns were the 2cm, 3.7cm, 4cm and the 5cm.

Attack methods:
1: The *von unten hinten* attack: the German pilot, slightly below and behind the British bomber, would point the nose of his aircraft slightly upwards so as to use the lethal front armament that was prevalent on all German night-fighters in order to rake the fuselage of the British bomber. The rear half of a heavy bomber, especially its bomb bay and rear turret, were especially vulnerable in this type of attack.
2: The *Schräge Musik* attack: the British heavy bombers had an acute blind spot, which lay directly below the fuselage. This German tactic took advantage of this vulnerability. The attacking German aircraft would get underneath the bomber and would then use its upward-firing guns, often to devastating effect. Engines and fuel tanks were especially vulnerable in this type of attack, which became increasingly common during the Battle of Berlin.

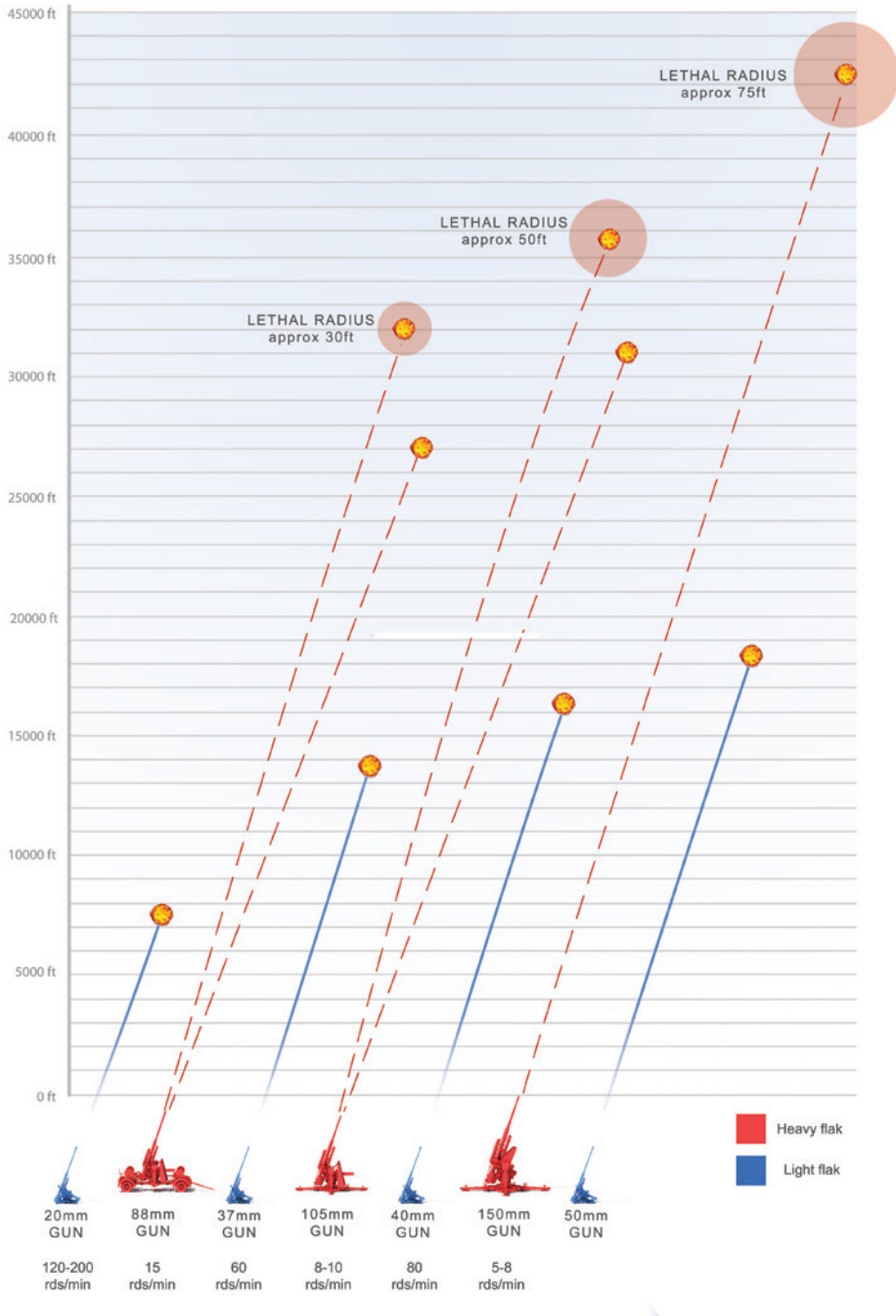
countermeasures that had within five months made the Luftwaffe night-fighter force much more formidable than before. In essence, as the Battle of Berlin went into the new year, the technological and tactical balance had shifted in favour of the German defenders, and this development would increase through spring 1944. The new plotting and control system quickly became a formidable defensive organization with few weaknesses capable of exploitation. The Germans were also aided by the British bombers having to traverse Germany on their long route to Berlin, which allowed many distant night-fighter squadrons to come into action. One German pilot later recalled:

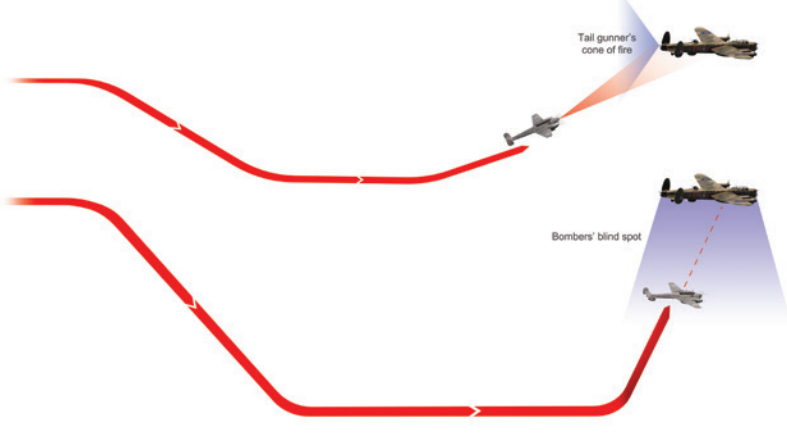
> We brought up fighter formations from the South, from the South-East, from the East, from the West, in order to obtain a more or less adequate fighting force with which to oppose that assault [against the Reich] … As soon as the first aircraft took off in England and reached a height of 500m we received the report: 'Assembly has started in ENGLAND' and their direction was then tracked.

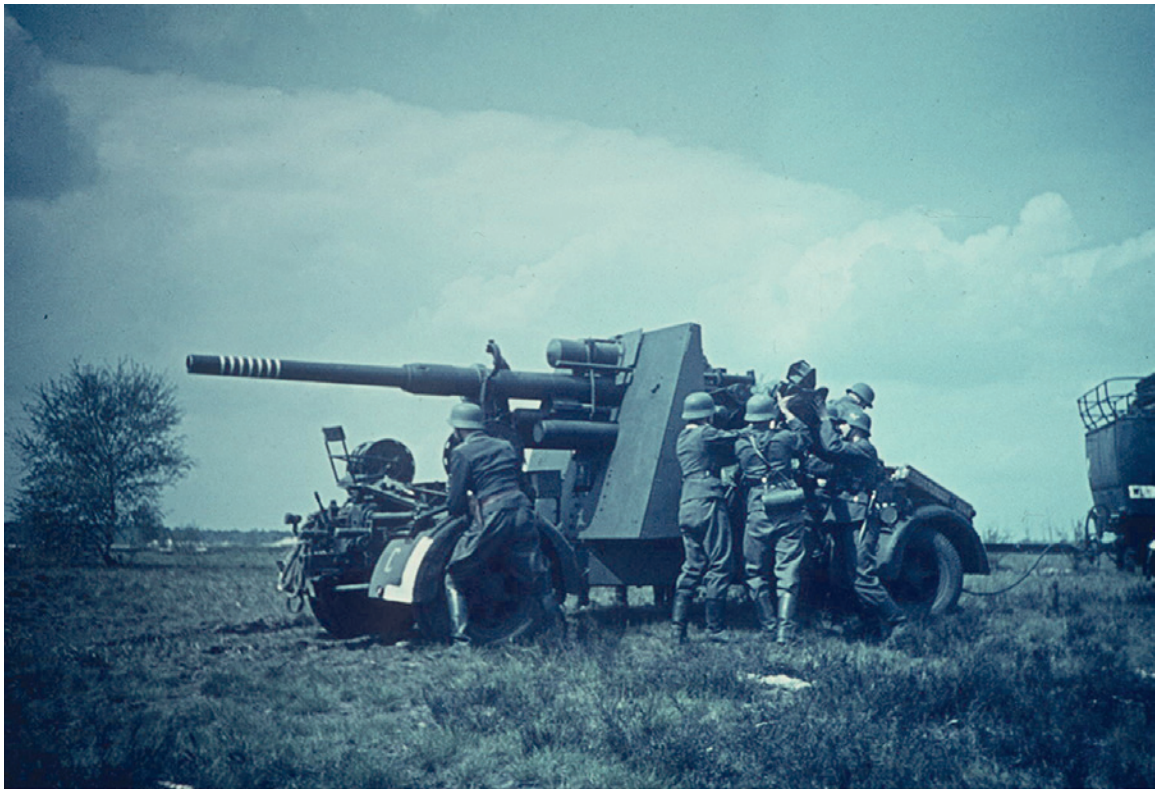
Yet it would be misleading to suggest the German defenders did not have disadvantages as well. They could also be the victim of the weather, especially as Bomber Command often chose nights that were clear for take-off in England but foggy and cloudy over Germany, hampering the night-fighters. All this highlighted the dangers of night-fighting, and wastage among crews – because of accidents and battle fatigue – was becoming an issue for both Tame and Wild Boar personnel. The latter suffered 45 per cent losses during this period, though flying single-engined fighters they were increasingly being used against the American daylight raids. The training system had done well in 1943 to provide more night-fighter pilots than aircraft, but this was not expected to continue in 1944. Finally, the period of the Battle of Berlin saw the loss of Luftwaffe aces Major Heinrich Prinz zu Sayn-Wittgenstein (83 victories), Hauptmann Manfred Meurer (65 victories), Oberfeldwebel Heinz Vinke (54 victories), Major Egmont Prinz zur Lippe-Weissenfeld (51 victories), and Major Alois Leuchner (45 victories) – such specialist skill could not be so easily replaced.

Flak

The Luftwaffe command centre at Berlin-Dahlem oversaw the air districts of the Reich. Berlin was Air District III and, with this, was the 1st Flak Division. Germany had a number of flak 'hot zones' – Hamburg, Bremen and the Ruhr area – but Berlin was one of the most formidable. The Director of Bomber Operations stated that, in


45000 ft
40000 ft
35000 ft
30000 ft
25000 ft
20000 ft
15000 ft
10000 ft
5000 ft
0 ft
LETHAL RADIUS
approx 75ft
LETHAL RADIUS
approx 50ft
LETHAL RADIUS
approx 30ft
Heavy flak
Light flak
20mm GUN
120-200 rds/min
88mm GUN
15 rds/min
37mm GUN
60 rds/min
105mm GUN
8-10 rds/min
40mm GUN
80 rds/min
150mm GUN
5-8 rds/min
50mm GUN


Tail gunner's cone of fire
Bombers' blind spot



The 88mm flak gun. These would open fire on aircraft illuminated by searchlights or would fire blind into assigned sections of the sky. It was a formidable weapon against Allied aircrews when it was pointed in the air, and a lethal weapon against Allied tank crews when pointed along the ground. (Photo by Arthur Grimm/ullstein bild via Getty Images)

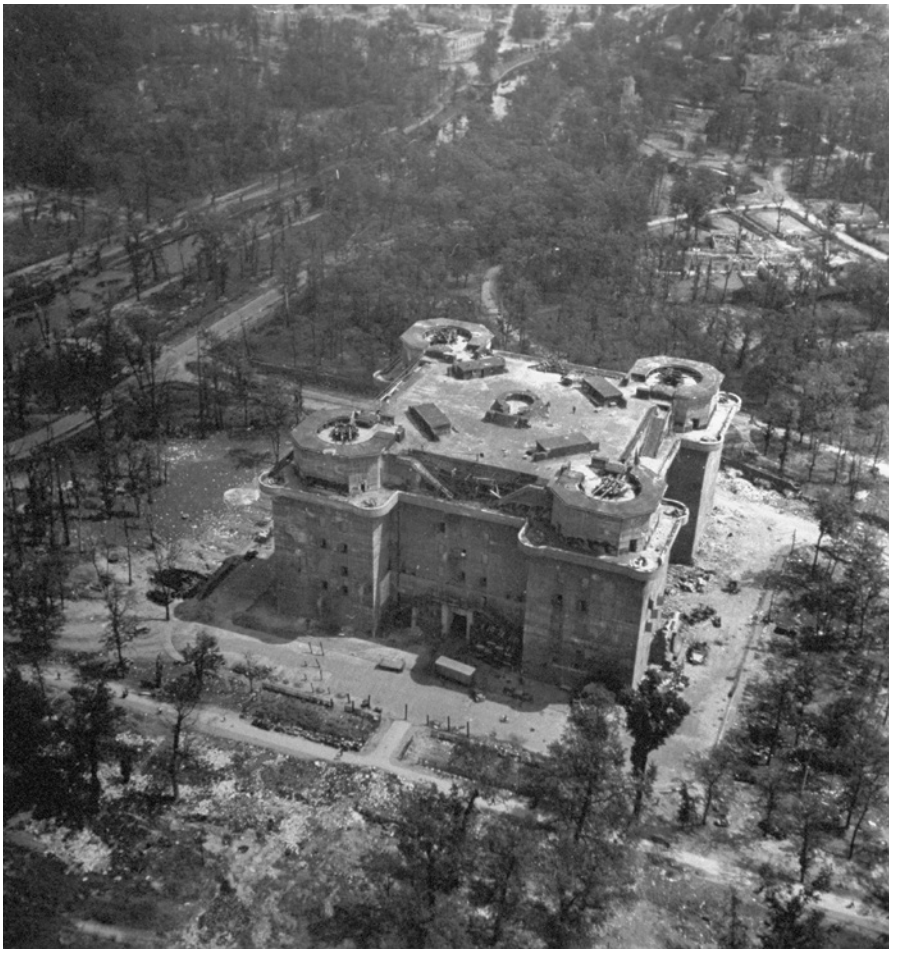
January 1944, the city had 440 heavy flak guns, 400 light flak guns and 245 searchlights. The outer defences of Berlin were in belts around the city: a ring of searchlights 30 miles from the centre and then anti-aircraft (AA) guns at some 20 miles from the centre. The inner defences were within the city itself, which contained six imposing flak towers (two were also built in Hamburg and three in Vienna). Flak Tower I was located in the Tiergarten; Flak Tower II at Friedrichshain; and Flak Tower III was sited at the nearby Stettiner Bahnhof. These huge structures were constructed during 1941 and 1942 and cost 60m Reichsmarks without any weaponry or equipment. Built from about 200,000 tonnes of very heavily reinforced concrete, and painted green for camouflage, they were three times stronger than the normal public air-raid shelters. After the war they would represent a real challenge for Berlin's occupying powers to demolish. Mounted on top were 24 extremely large AA guns of 12.8cm calibre, which could fire a shell at least 40,000ft. Within each tower there was air-raid shelter provision for 20,000 people, a hospital, a Gestapo office and rooms for essential air-defence services. Elsewhere, a flak battery of 8.8cm in Berlin by early 1944 now consisted of 8–12 guns per battery and 16 searchlights.

German Flak Defences – 24 January 1944

Target	**Heavy AA**	**Light AA**	**Searchlights**
Berlin	440	400	245
Hamburg	260	320	130
Bremen	280	370	120
Hanover	154	220	120
Ruhr Area	750	1000	400

Whether all this was particularly effective is open to question, though a heavy-flak barrage could distract the Pathfinders from undertaking accurate marking over the target and, moreover, the sound of it provided a psychological prop for the German civilian population in hearing that the air defences were fighting back. But the introduction of *Window* by Bomber Command in July 1943 seriously and permanently reduced the lethality of flak defences by blinding the *Würzburg* radars on which the guns depended. Thereafter, the AA guns tended to be fired merely as box barrages using visual observations or as more predicted fire. Nonetheless, under Korten the German flak defences continued to be built up. Flak defences used about 30 per cent of German artillery production in 1944 and some 20 per cent of heavy shell output. They also absorbed a colossal 900,000 men, including volunteers from the Russian POWs. The other German air defences absorbed further manpower; apart from normal airfield and servicing personnel, about 32,000 personnel were required to man the night-fighter control system in Western Germany alone.

Finally, Berlin was also defended by passive defences in the form of 14 decoy sites. The Germans would use these – involving colour markers, fire, explosives and searchlights – in an attempt to pull British bombing away from Berlin. There is some evidence to say that decoy sites – both near Berlin and other German cities, such as Magdeburg – were successful in fooling the British. The Germans also camouflaged prominent Berlin landmarks, such as lakes, in order to provide fewer reference points for the bomber aircrews.



A flak tower in Berlin. The German capital had three of these monstrous structures, this one being in the Tiergarten. Each one contained several batteries of the formidable 12.8cm flak gun. (Photo by William Vandivert/The LIFE Picture Collection/ Getty Images)

CAMPAIGN OBJECTIVES

The unmistakeable profile of Prime Minister Sir Winston Churchill watching 7 Squadron Stirlings departing for an operation on 7 June 1941 (against the *Prinz Eugen* at Brest). Churchill's interest in Bomber Command and the strategic air offensive against Germany fluctuated between great enthusiasm and commitment and increasing doubt and disinterest. Overall, he believed that bombing alone would not defeat Germany. (Photo by Capt Horton/ IWM via Getty Images)

The C.-in-C. Bomber Command contends … that the destruction of Berlin by the combined effort of the Americans and ourselves could now end the war.

Coryton to Portal, 5 November 1943

Berlin

RAF Bomber Command had targeted Berlin since summer 1940. Nicknamed 'The Big City' by bomber crews, it was an important target for a number of reasons. With a population of 4.4 million, in 1943 Berlin was the third largest city in the world, a vast sprawling metropolis of 345 square miles. It was the political and economic administrative centre of the German Reich and one of the most important industrial and manufacturing cities in Continental Europe. The major industrial zones were clustered in two areas: the north-western suburbs of Spandau, Siemensstadt, Wedding, Tegel and Reinickendorf; and the south and south-eastern areas of Marienfelde, Tempelhof, Johannisthal and Schöneberg. These areas cemented Berlin's reputation as a place of industrial importance that included the electrical engineering firms of AEG, Siemens and Telefunken, the military industries of Rheinmetall-Borsig, Alkett and Mauser, the makers of optical instruments such as Lorenz and Zeiss, and the aircraft/aero-engine plants of Argus, BMW, Daimler-Benz, Henschel, Dornier, Heinkel and Focke-Wulf. Berlin was important as a target of German aircraft production, but this would never be acknowledged as such by the Air Ministry.

Beyond this, many leading German firms had administrative offices in Berlin, which were often concentrated in the city centre. On another level, Berlin was a major hub of internal communications, both maritime and rail. The former utilized the River Spree, which ran

from the south-east to the north-west through the city centre, and the city's canals that connected the city to the Elbe and Hamburg (in the west) and to the Oder and Stettin (in the east). Berlin therefore had a number of large inland harbours, particularly the Westhafen, where up to 70 ships could be loaded simultaneously.

The main railway lines between western and north-eastern Europe ran through Berlin, with three major stations. In addition, main lines radiated from five other terminal railway stations to other parts of Germany, and an extensive network served Berlin's suburbs. Finally, the German capital contained many important government and administrative buildings, which included the Reich's Chancellery, the War Office and the German Air Ministry on the Wilhelmstrasse. But above all it was Berlin's built-up areas that were the major target, given that the morale of the civilian population was the primary objective of Harris' air campaign. Destroying Berlin would not be easy as it was less vulnerable to fire owing to the lack of a concentrated area of wooden buildings, while its modern concrete construction, considerable parklands and broad boulevards all decreased the possibility of a firestorm taking hold, unlike such places as Rostock, Lübeck and Hamburg.

For the Germans, the objective of the campaign was straightforward: defend the skies over Germany and make RAF attacks increasingly costly. They were aided by the fact that the American daylight offensive had stalled in mid-August, following the heavy losses of the Schweinfurt-Regensburg raid; USAAF long-distance operations against German targets would be minimal for the rest of the year. The Luftwaffe would only come under real pressure once the combined bomber offensive became a truly combined effort from early 1944 onwards.

Moreover, the Germans benefitted from the fact that Berlin was a long way for the British bombers, involving a round trip of about 1,000 miles, taking about 8 hours, with a considerable amount of flying time over occupied Europe and Germany. Taking a gamble on attacking this difficult target had already finished one C-in-C Bomber Command, Air Chief Marshal Sir Richard Peirse, Harris' predecessor, in winter 1941/42. Therefore, for the first 12 months of his command, Harris did not undertake Berlin raids at all; he felt his force was simply not yet ready to tackle this toughest of targets. Yet by early 1943 pressure had increased from Churchill, at the time the foremost advocate of bombing the German capital. On two occasions, the prime minister would intervene directly to pressure Bomber Command to take on Hitler's capital. In January, he requested this for political reasons – to impress the Americans at the Casablanca Conference and to help out the Soviets on the Eastern Front. Five *Tannenburg* raids would go ahead – all Lancaster affairs – but these raids would reveal some of the later problems encountered during the Battle of Berlin, namely bad weather, high losses and inaccurate bombing.

Meanwhile, as a result of the decision by the Combined Chiefs of Staff (CCOS) on 21 January, the priorities of the Combined Bombing Offensive (CBO) were defined in the overall objective of the Casablanca Directive of 4 February. Labelled as 'Periodic' was Berlin – to be bombed 'when conditions suitable for attainment of specially valuable results unfavourable to enemy morale, or favourable to Russian morale'. Attacking the German capital therefore did conform to official British bombing policy. However, on 10 June a new instruction was issued that revised the priorities of the Casablanca Directive, with 'first priority' now being 'the G.A.F. [Luftwaffe] Fighter forces and the industry upon which they depended' and its specific targets of fighter aircraft production industries and ball bearing plants. This revision, owing to the redeployment of increasing numbers of Luftwaffe day- and night-fighters in defence of the German homeland in the face of the CBO, was more a reflection of the precision-bombing philosophies of the Americans and its VIII (US) Bomber Command. The new directive led to the formation of the 'Jockey Committee' that met weekly (until the end of the war) to ascertain the priorities in the bombing campaign against German fighter aircraft production. Yet the complication lay in the precise role of Harris' force, which now laboured under the vague notion that 'while

the forces of R.A.F. Bomber Command will be employed in accordance with their main aim in the general disorganization of German industry, their action will be designed as far as practicable to be complementary to the operations of the VIII U.S.A.A.F.'. This was ordered to not just help the Americans but was, in the words of one report, also designed 'to ensure liberty of action for our strategic bombers over Germany' and to reduce the Luftwaffe prior to the invasion of Continental Europe. Nevertheless, from this time on, problems of interpretation of Bomber Command's precise role would become apparent – and the first schisms over what precisely was the major priority for Bomber Command started to be seen by late August/early September 1943, precisely at the time when Harris had begun the Battle of Berlin. The disagreement only got worse and would form Harris' other great 'battle' during winter 1943/44, namely the row with the Air Ministry over British bombing policy. This tension came to a head during the Battle of Berlin, particularly in the bitter month of January 1944.

Major-General Ira C. Eaker, Commander US Eighth Air Force. Eaker presided over a difficult time for the American Air Force in Britain. After a sluggish expansion, his command became even more difficult by autumn 1943. Badly mauled – but not defeated – by the operations to Schweinfurt in August and October, Eaker would conduct small-scale experiments in night-bombing as part of Bomber Command's nocturnal attacks. Concluding it was not the way forward, he removed his force from deep-penetration operations for the rest of 1943. It was for the support of this wounded force that Harris appealed to Churchill on 3 November 1943, prior to the start of the Battle of Berlin. (Photo by Margaret Bourke-White/The LIFE Picture Collection/Getty Images)

Nevertheless, the Pointblank Directive, so important in its medium-term implications, came at a time when little immediate change in Bomber Command's operations could be effected, as at this time Harris had been attacking German war industry during the Battle of the Ruhr. Within days of the new directive, Harris had not attacked targets connected with the German aircraft industry but had instead undertaken the area bombing of Düsseldorf (11/12 June) and Bochum (12/13 June). Six days after the new instruction, Harris explained to Portal his reasoning behind target selection, which indicated no change of philosophy or real compliance with the new bombing policy. 'As the nights lengthen out', the C-in-C wrote:

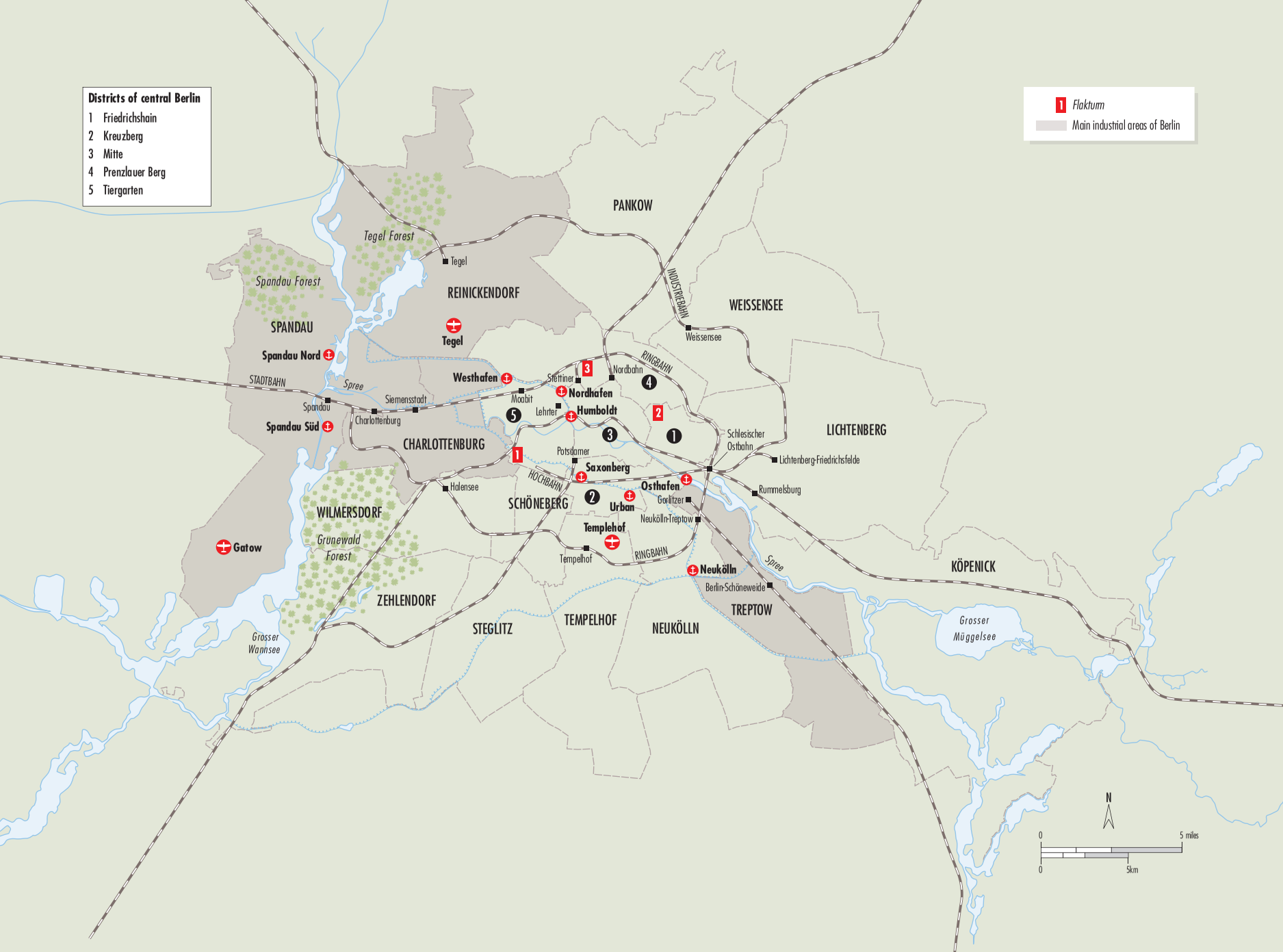
> We hope to have dealt sufficiently severely with the Ruhr to necessitate only an occasional topping up to keep it out of action … We will then go progressively further into Germany in I hope sufficient strength to be able to leave behind us, as we progress, a state of devastation similar to that now obtaining in the Ruhr; if the Boche waits for it. We shall then have available to us more plums in the way of objectives such as the complete destruction of Hamburg, and a really hearty hammering of Berlin …

It was a statement of what Harris fully intended to do next, and it was equally clear that the destruction of Berlin lay firmly within his sights. Yet owing to the light summer nights, and other pressing commitments, attacks on the German capital had to wait another two months. In the meantime, Harris embarked on the Battle of Hamburg, which in its overall level of destruction after four attacks very much represented the apogee of area bombing. Harris was then ordered to turn his bombers against Italy in a ten-day 'blitz' against Genoa, Turin and Milan to push the new Italian government under Marshal Badoglio towards an armistice with the Allies. Bomber Command also undertook an attack on the V-2 rocket facility at Peenemünde. This saw the accurate use of area bombing against a particular industrial/military facility – something that was duly noted by those Air Staff who increasingly favoured deploying Harris' force against more specific targets.

Nevertheless, Harris remained in bullish mood about the capabilities of his force at this time. 'It is my firm belief', he wrote on 12 August, 'that we are on the verge of a final showdown in the bombing war and that the next few months will be vital … I am certain that given average weather and concentration on the main job we can push Germany over by bombing this year'. But the encouragement to return to Berlin came from the prime minister, who once again was engaging in some Anglo-American summitry at the Quadrant Conference in Quebec. On 19 August, Portal communicated Churchill's wishes to the Vice-Chief of the Air Staff (VCAS) Air Chief Marshal Sir Douglas Evill by asking for an 'estimate of date' by which heavy attacks on Berlin could commence. 'In present war situation', it was stated, 'attacks on Berlin on anything like Hamburg scale must have enormous effect on Germany as a whole'. This was a careless comment that did not take into account what Harris needed to drop in order to achieve this and, crucially, that this level of bombing would require a sustained offensive against the German capital. Evill replied that:

> Harris intends to initiate the operation you suggest as soon as present moon has waned. He considers that a total of 40,000 tons will be required if the Hamburg scale of attack is to be applied. The operations would be of a prolonged nature since it would be necessary to shift attacks intermittently to other major targets so as to prevent undue concentration of enemy defences against this particular attack.

The urgency in attacking Berlin at this time was because of Germany's worsening strategic situation in July/August 1943, with the setbacks on the Eastern and Mediterranean Fronts. Echoing the rationale behind the *Tannenburg* operations (in which the 16 February directive


Districts of central Berlin
1 Friedrichshain
2 Kreuzberg
3 Mitte
4 Prenzlauer Berg
5 Tiergarten
1 Flaktum
Main industrial areas of Berlin
PANKOW
REINICKENDORF
WEISSENSEE
SPANDAU
CHARLOTTENBURG
WILMERSDORF
SCHÖNEBERG
ZEHLENDORF
STEGLITZ
TEMPELHOF
NEUKÖLLN
TREPTOW
KÖPENICK
LICHTENBERG
Tegel Forest
Spandau Forest
Grunewald Forest
Grosser Wannsee
Grosser Müggelsee
Spree
Tegel
Spandau Nord
Spandau Süd
Gatow
Westhafen
Nordhafen
Humboldt
Saxonberg
Osthafen
Urban
Templehof
Neukölln
Tempelhof
Halensee
Moabit
Lehrter
Stettiner
Nordbahn
Potsdamer
Gorlitzer
Neukölln-Treptow
Berlin-Schöneweide
Rummelsburg
Lichtenberg-Friedrichsfelde
Schlesischer Ostbahn
Weissensee
Siemensstadt
Charlottenburg
Spandau
STADTBAHN
RINGBAHN
HOCHBAHN
INDUSTRIEBAHN
N
0
5 miles
0
5km

had stated 'we should rub in the Russian Victory by further attacks on Berlin as soon as conditions are favourable', Germany's loss of Kharkov on 23 August was followed by a raid on Berlin that night. Yet the other aspect relates to specific intelligence from Germany that caused the British to conclude that German morale in the wake of the Hamburg attacks was cracking. Bletchley Park decryptions of Japanese telegrams stated that 'schools, hospitals, archives and government departments were being evacuated [in Berlin] and the population was queuing to leave by train' and that 'the Hamburg raids had caused panic in Berlin'. Other decryptions suggested that British heavy bombing of northern Italy had done much to hasten the demise of the Mussolini regime. Such evidence therefore only served to heighten expectations that strategic bombing might just end the war.

The 'opening phase', August/September 1943

After a four-and-a-half-month break, the German capital was bombed again. Different views exist as to whether this was the actual start of the Battle of Berlin. In their post-war accounts, both Harris and Bennett state it opened on 18/19 November. However, the Deputy C-in-C Bomber Command, Air Vice-Marshal Sir Robert Saundby, wrote the Battle of Berlin commenced in August 1943. The evidence[1] does suggest that the latter account is more accurate, and Harris and Bennett were expressing views that overlooked the campaign's 'false start'. Indeed in late September, Harris had admitted to the Air Staff that 'he had intended to stage the Battle of Berlin in this dark period'.

On 23/24 August, Bomber Command dispatched 727 aircraft to Berlin, though a huge number of aircraft, 70 in total, were ERs (early returns). Owing to problems with H2S, the southern part of the city was marked but the bombing was generally scattered, though it did see damage to the government buildings on the Wilhelmstrasse and the industrial area of Tempelhof, and aircrews reported large fires and explosions. But many Main Force aircraft either arrived late or approached from a different direction – south-west instead of south-south-east – so their bombing went astray miles to the west of the aiming point, and many bombs fell instead onto open country and surrounding villages. It was also an expensive attack with 56 aircraft, or 7.7 per cent, lost, a statistic that revealed all too clearly that German air defences were very active, especially in defending the capital. The casualty ratio looked even worse for the lower-flying British bombers: the Stirling had 12.9 per cent losses (16 aircraft) and the Halifax had 9.2 per cent losses (23 aircraft). These were the highest losses in a night raid hitherto, but the Battle of Berlin would see this unwelcome record broken many times. Nonetheless, on 31 August/1 September Harris selected the German capital again for an attack by 622 bombers. There were 80 ERs this time and further high losses to the alert German air defences of 47 aircraft (7.6 per cent). Once again, the toll among the Stirlings and Halifaxes was appalling with 16 per cent (17 aircraft) and 11.4 per cent (20 aircraft) respectively. This was a clear indication that a proportion of Harris' force was not suitable for such a tough target. Given the ferocious air defences, the marking was also inaccurate – well to the south of the city centre – and the bombing itself was short of the target owing to cloud obscuring the target indicators. The 'creepback' effect, useful if retreating back from an aiming point across an urban area, fell

1 Bennett, D., *The Pathfinders* (Sphere, 1971); Harris, A., *Bomber Offensive* (Leo Cooper, 1995 ed.); Saundby, R., *Air Bombardment: The Story of its Development* (Chatto & Windus, 1961)

instead into open country up to 30 miles along the bombers' route. This suggested that some Main Force crews had dropped their bombs early in order to be away from the target area as quickly as possible – a phenomenon Bennett would allude to in a letter to Harris months later. Undeterred, the C-in-C chose the German capital three nights later for attack by a Lancaster-only force, the decimation of his Stirling and Halifax forces having left its losses on the daily 'Order of Battle'. But once again losses stood at 22 bombers (7 per cent). Yet again the marking was short of the target, but the north-west industrial districts of Charlottenburg, Wedding, Moabit and Siemensstadt suffered damage – including a major brewery. Despite a reasonable amount of damage, however, the real aiming point had been in the north-east and hence the attack was classified a failure because it was an 'undershoot'. The C-in-C did attempt further Berlin operations during September 1943. A fourth attack on 8/9 September – alongside an attack on gun positions at Boulogne (which went ahead) – was cancelled at 1745hrs owing to weather conditions along the route and at the bomber bases. The following day another planned attack on Berlin was aborted due to thundery rain and low cloud at all bases south of the Humber and conditions over north-east France and Holland.

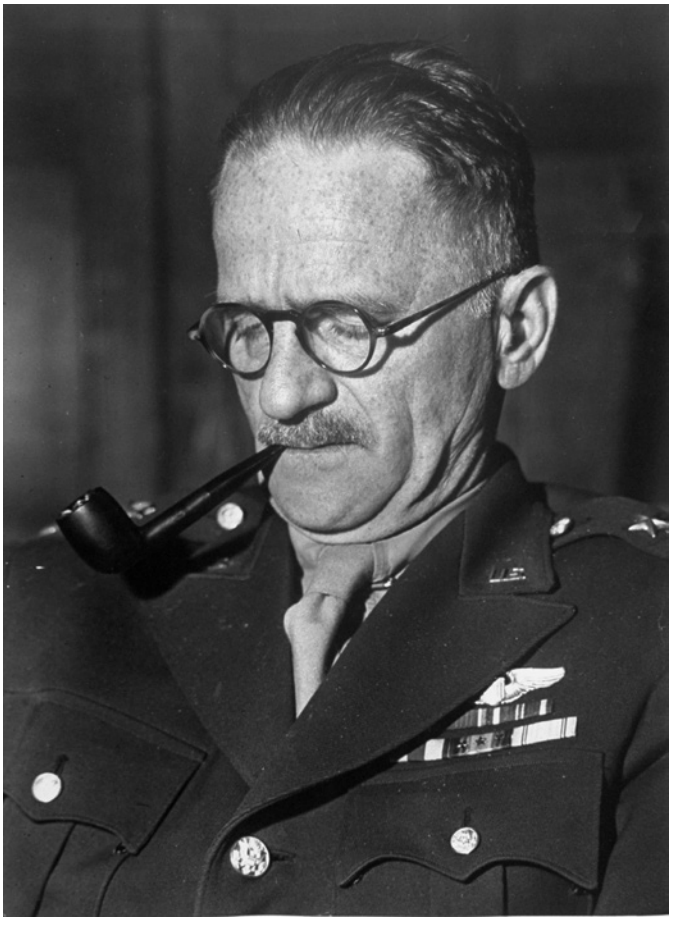
Notwithstanding his commitment of destroying Berlin in a prolonged campaign that required the dropping of 40,000 tons of bombs, Harris pulled back from the German capital after only three raids. As he explained to the Air Staff on 22 September, there were two interconnected reasons for this. First, Harris had wanted to engage in the Battle of Berlin alongside the American VIII Bomber Command, but this force continued to suffer from 'diversions', with the latest seeing three Liberator groups being sent to the Mediterranean Theatre, all of which negatively impacted on the ability of the Americans to cope with the heavy casualties incurred attacking Berlin. Second, he stated that strikes in the Avro factories had led to 'a deficiency of 130 Lancasters this month', and consequently he also did not have 'the strength to sustain the heavy casualties involved'. Harris was already admitting that losses would be high in this battle of attrition against the German capital and, at this time, neither the British and American strategic air forces had the aircraft to sustain this. Indeed, in the three raids Harris had lost 125 aircraft, with the average loss being worryingly high at 7.4 per cent. As a result, the Berlin offensive was now postponed until late October – though 'there was always the possibility that by that time the tactical situation would have deteriorated to such an extent that we could no longer penetrate to Berlin'. The last comment was a gloomy prognosis and an admission by Harris that he was going to conduct a long-distance bombing campaign without any kind of air superiority over enemy territory.

The man of many titles, including the Commander-in-Chief Luftwaffe, Reichsmarschall Hermann Göring. Luftwaffe failures throughout 1943, starting with the German defeat at Stalingrad and ending with the Battle of Berlin, saw his power and influence wane within Hitler's inner circle. (Photo © Corbis via Getty Images)

Indeed, the British losses showed that the Luftwaffe, despite its humiliation at the hands of *Window* during the Battle of Hamburg, was far from ineffective. The last two attacks had shown that, whatever happened elsewhere, the Luftwaffe could mount serious resistance

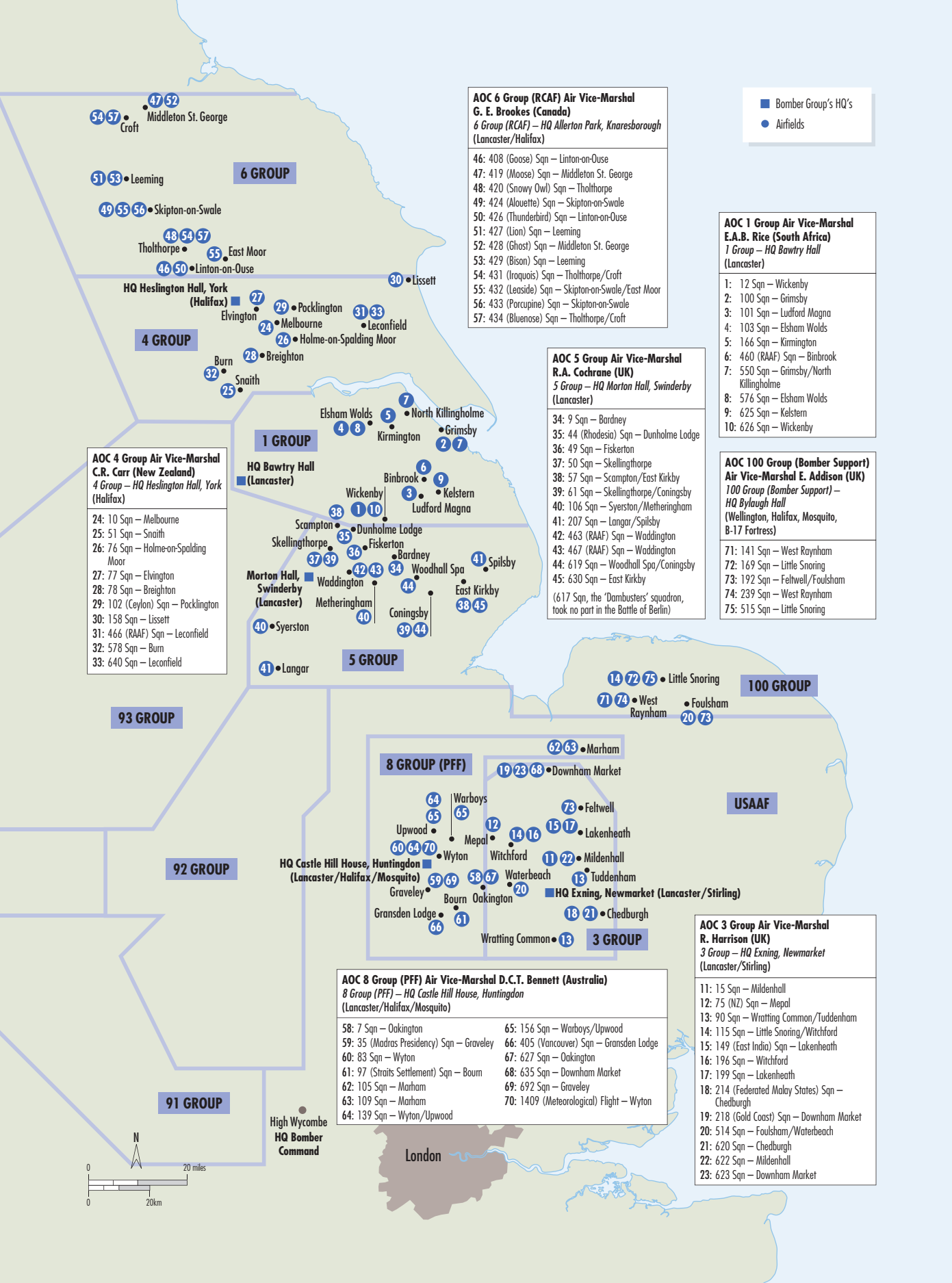
to the bombing of Berlin and make British long-distance raids prohibitively expensive. *Window* had been used, but worryingly the night-fighters had simply gathered en masse around the German capital because the British bombers' course and heading had been plotted early, and a running commentary had directed the German aircraft accordingly. Straggling British aircraft, not protected by *Window*, were soon picked off. Moreover, on 30 August/1 September the Germans had pioneered a new tactic, namely illuminating the bomber-stream over the target by lanes of white flares so those night-fighters not equipped with airborne radar could deliver accurate attacks. This led to a huge number of combats in the target area. German air defences, at every level, remained potent, as did the alertness and intensity of Berlin's searchlights and flak defences.

Harris also pulled back from Berlin because a heavy concentration of attack, Hamburg-style, had not been achieved. This was a consequence of problems with target marking. The German capital lay beyond *Oboe* range, while H2S, which had great hopes placed on it, found Berlin 'the most difficult [target] of them all'. British aircrews aimed to use H2S to fix a geographical reference point, such as a hook-like built-up area from which to then fly on to the city centre aiming point, but this never showed clearly on the H2S screen. Nor could H2S identify Berlin's waterways or the east–west route of the River Spree that ran through the city centre. The real problem with H2S was that its viewing screen became completely filled up by urban central Berlin, so an accurate position over the city could not be ascertained (unlike Hamburg, where the coastline of the port city could be identified). H2S could only identify Berlin's suburbs, which Harris believed was 'possibly due to the prevalence of steel-frame structures in the outlying areas'. All this affected the concentration of the attack – or the lack of it. The second raid saw another problem occur, in which H2S attempted to gain a fix on notable city features, but inaccurate wind speed predictions caused the bombers to be thrown off track.



Major-General Carl Spaatz. He moved to the European Theatre of Operations (ETO) from the Mediterranean during winter 1943/44 in order to become the commanding officer of a new organization that amalgamated all American air forces in Europe, the United States Strategic Air Forces Europe (USSAFE). (Photo by Margaret Bourke-White/The LIFE Picture Collection/Getty Images)

Consequently, the third Berlin raid saw a reversion to the procedure of timed runs from a major geographical landmark, namely the Müggelsee, but this still remained inaccurate as the aiming point was missed. Overall, the scattered bombing, relatively easy to achieve given the vastness of the Greater Berlin area, had caused useful damage but not serious destruction (Harris estimated about 560 acres). The attacks had shown that a concentrated attack on the aiming point in 'The Big City' was difficult to achieve, and remained a difficult prospect unless significant technical developments came into being. As it stood, H2S remained an inconsistent bombing tool, and there would soon be further problems with it during the Battle of Hanover, although Hamburg had been a particularly favourable target. Ultimately what was needed was the Mk III version of H2S, which would make greater differentiations over built-up areas and their landmarks. But this would not be ready until the autumn, and Harris decided to wait until then before resuming the Berlin offensive.


Bomber Group's HQ's
Airfields
AOC 6 Group (RCAF) Air Vice-Marshal G. E. Brookes (Canada)
6 Group (RCAF) – HQ Allerton Park, Knaresborough
(Lancaster/Halifax)
46: 408 (Goose) Sqn – Linton-on-Ouse
47: 419 (Moose) Sqn – Middleton St. George
48: 420 (Snowy Owl) Sqn – Tholthorpe
49: 424 (Alouette) Sqn – Skipton-on-Swale
50: 426 (Thunderbird) Sqn – Linton-on-Ouse
51: 427 (Lion) Sqn – Leeming
52: 428 (Ghost) Sqn – Middleton St. George
53: 429 (Bison) Sqn – Leeming
54: 431 (Iroquois) Sqn – Tholthorpe/Croft
55: 432 (Leaside) Sqn – Skipton-on-Swale/East Moor
56: 433 (Porcupine) Sqn – Skipton-on-Swale
57: 434 (Bluenose) Sqn – Tholthorpe/Croft
AOC 1 Group Air Vice-Marshal E.A.B. Rice (South Africa)
1 Group – HQ Bawtry Hall
(Lancaster)
1: 12 Sqn – Wickenby
2: 100 Sqn – Grimsby
3: 101 Sqn – Ludford Magna
4: 103 Sqn – Elsham Wolds
5: 166 Sqn – Kirmington
6: 460 (RAAF) Sqn – Binbrook
7: 550 Sqn – Grimsby/North Killingholme
8: 576 Sqn – Elsham Wolds
9: 625 Sqn – Kelstern
10: 626 Sqn – Wickenby
AOC 5 Group Air Vice-Marshal R.A. Cochrane (UK)
5 Group – HQ Morton Hall, Swinderby
(Lancaster)
34: 9 Sqn – Bardney
35: 44 (Rhodesia) Sqn – Dunholme Lodge
36: 49 Sqn – Fiskerton
37: 50 Sqn – Skellingthorpe
38: 57 Sqn – Scampton/East Kirkby
39: 61 Sqn – Skellingthorpe/Coningsby
40: 106 Sqn – Syerston/Metheringham
41: 207 Sqn – Langar/Spilsby
42: 463 (RAAF) Sqn – Waddington
43: 467 (RAAF) Sqn – Waddington
44: 619 Sqn – Woodhall Spa/Coningsby
45: 630 Sqn – East Kirkby
(617 Sqn, the 'Dambusters' squadron, took no part in the Battle of Berlin)
AOC 100 Group (Bomber Support) Air Vice-Marshal E. Addison (UK)
100 Group (Bomber Support) – HQ Bylaugh Hall
(Wellington, Halifax, Mosquito, B-17 Fortress)
71: 141 Sqn – West Raynham
72: 169 Sqn – Little Snoring
73: 192 Sqn – Feltwell/Foulsham
74: 239 Sqn – West Raynham
75: 515 Sqn – Little Snoring
AOC 4 Group Air Vice-Marshal C.R. Carr (New Zealand)
4 Group – HQ Heslington Hall, York
(Halifax)
24: 10 Sqn – Melbourne
25: 51 Sqn – Snaith
26: 76 Sqn – Holme-on-Spalding Moor
27: 77 Sqn – Elvington
28: 78 Sqn – Breighton
29: 102 (Ceylon) Sqn – Pocklington
30: 158 Sqn – Lissett
31: 466 (RAAF) Sqn – Leconfield
32: 578 Sqn – Burn
33: 640 Sqn – Leconfield
AOC 8 Group (PFF) Air Vice-Marshal D.C.T. Bennett (Australia)
8 Group (PFF) – HQ Castle Hill House, Huntingdon
(Lancaster/Halifax/Mosquito)
58: 7 Sqn – Oakington
59: 35 (Madras Presidency) Sqn – Graveley
60: 83 Sqn – Wyton
61: 97 (Straits Settlement) Sqn – Bourn
62: 105 Sqn – Marham
63: 109 Sqn – Marham
64: 139 Sqn – Wyton/Upwood
65: 156 Sqn – Warboys/Upwood
66: 405 (Vancouver) Sqn – Gransden Lodge
67: 627 Sqn – Oakington
68: 635 Sqn – Downham Market
69: 692 Sqn – Graveley
70: 1409 (Meteorological) Flight – Wyton
AOC 3 Group Air Vice-Marshal R. Harrison (UK)
3 Group – HQ Exning, Newmarket
(Lancaster/Stirling)
11: 15 Sqn – Mildenhall
12: 75 (NZ) Sqn – Mepal
13: 90 Sqn – Wratting Common/Tuddenham
14: 115 Sqn – Little Snoring/Witchford
15: 149 (East India) Sqn – Lakenheath
16: 196 Sqn – Witchford
17: 199 Sqn – Lakenheath
18: 214 (Federated Malay States) Sqn – Chedburgh
19: 218 (Gold Coast) Sqn – Downham Market
20: 514 Sqn – Foulsham/Waterbeach
21: 620 Sqn – Chedburgh
22: 622 Sqn – Mildenhall
23: 623 Sqn – Downham Market
6 GROUP
4 GROUP
1 GROUP
5 GROUP
100 GROUP
93 GROUP
8 GROUP (PFF)
USAAF
92 GROUP
3 GROUP
91 GROUP
HQ Heslington Hall, York (Halifax)
HQ Bawtry Hall (Lancaster)
Morton Hall, Swinderby (Lancaster)
HQ Castle Hill House, Huntingdon (Lancaster/Halifax/Mosquito)
HQ Exning, Newmarket (Lancaster/Stirling)
High Wycombe HQ Bomber Command
London
Middleton St. George
Croft
Leeming
Skipton-on-Swale
Tholthorpe
East Moor
Linton-on-Ouse
Lissett
Elvington
Pocklington
Melbourne
Leconfield
Holme-on-Spalding Moor
Breighton
Burn
Snaith
Elsham Wolds
North Killingholme
Kirmington
Grimsby
Binbrook
Kelstern
Wickenby
Ludford Magna
Scampton
Dunholme Lodge
Skellingthorpe
Fiskerton
Bardney
Waddington
Woodhall Spa
Spilsby
East Kirkby
Metheringham
Coningsby
Syerston
Langar
Little Snoring
West Raynham
Foulsham
Marham
Downham Market
Warboys
Upwood
Mepal
Feltwell
Lakenheath
Wyton
Witchford
Mildenhall
Waterbeach
Tuddenham
Graveley
Bourn
Oakington
Gransden Lodge
Chedburgh
Wratting Common
0 20 miles
0 20km
N

OPPOSITE RAF BOMBER COMMAND GROUPS & ORDER OF BATTLE, NOVEMBER 1943

The pullback from Berlin was Bomber Command's first defeat of 1943. But it came at an awkward moment for Harris. A combination of the successful attack on Peenemünde, which showed that accurate area bombing could wreck a precise industrial facility, and the Americans' heavy losses against Schweinfurt on 17 August, had caused the Air Staff to believe that Bomber Command now had to abide more by the Pointblank Directive (June 1943) and attack production centres of the German aircraft industry. It was for this reason that Bottomley sent Harris a reminder to this effect on 3 September, based on the CCOS' decisions of 25 August. Here were the clear beginnings of the HQ Bomber Command/Air Ministry schism on this issue that was to become so rancorous throughout winter 1943/44. Harris chose to ignore this instruction, at least initially, by mounting an attack on Berlin that night. But on 25 September Bottomley undertook some stocktaking on RAF's role in the CBO and the progress being made by both strategic air forces in the fulfilment of the Pointblank Directive. Despite Bomber Command having been given a list of six cities – Leipzig, Kassel, Brunswick, Gotha, Augsburg and Bernburg – that were deemed pivotal to fighter production and particularly suitable for night attack, Bottomley stated that up to 31 August 'no town associated with fighter production had been attacked by Bomber Command'. Yet now that autumn had approached and 'operations involving deeper penetration are being undertaken by Bomber Command [against Berlin and Hanover], there seems to be sound reason for attempting to adhere to the combined plan', starting by attacks on the six cities connected with the German aircraft industry.

Nearly 11 weeks would pass between the Berlin operation of 3/4 September and the resumption of the offensive on 18/19 November, which begs two questions: did Harris fulfil the Pointblank Directive, and did his force make improvements in its bombing capabilities during this period that made it possible to tackle Berlin again? The answer to the first question was partly, as Hanover (four times), Kassel (twice) and Stuttgart (once) were attacked. The answer to the second was that Hanover – attacked during the Battle of Hanover – revealed the limitations of Bomber Command at this time. The trouble began with the first attack on 22/23 September, which saw the target marking horribly off target. Given the target marking difficulties over Berlin, it was little surprise that HQ Bomber Command was extraordinarily jumpy about the performance over Hanover. Harris issued a rebuke to the Pathfinder crews that stated 'the attack on Hanover was a complete flop. The worst failure we have had yet'. Blame was placed on PFF crews being too easily fooled by visual markers and incendiaries, some of which were decoys laid by the Germans, and poorly placed markers only served 'to lead the entire force astray'. The other groups did not escape criticism either, as Main Force crews had shown poor navigation that had contributed to 'a record flop'. Unless group commanders 'take a firm grip now and put this deplorable state of affairs right', Harris warned, 'we are faced by a prospect of wasted effort, futile casualties and consequent failures, which cannot be'. The tone to all his group commanders was cordial enough, but the message was clear: target marking, navigational skills and bombing concentration had to improve.

This, then, was the force that Harris would lead back into battle against Berlin from mid-November 1943. Bomber Command could still be effective, as shown by the firestorms against Hanover (on 8/9 October) and Kassel (on 22/23 October), but the destruction of Berlin would require a massive, sustained, and accurate effort against a long-distance and heavily defended target.

The Air Staff's preferred targets instead of Berlin: Germany's aircraft assembly plants and ball bearing industries. These pictures show the Messerschmitt Bf 109 plant at Augsburg (left) and a ball bearing factory in Schweinfurt (right). These were major targets for the Anglo-American strategic bombers during Operation *Argument* in mid-February 1944. (Left: photo by Galerie Bilderwelt/Getty Images; right: photo by Margaret Bourke-White/The LIFE Picture Collection/Getty Images)

Harris' memorandum: destroy Berlin to win the war

On 11 October Harris received a message of congratulations from Churchill about the destruction he had handed out to German cities, particularly against Hanover two nights before. Such a message indicated to Harris that prime ministerial approval for the city bombing campaign remained ever present. Harris therefore sent Churchill a memorandum on completing this programme, with Berlin as the top target, on 3 November. In making this appeal Harris felt on safe ground, given the prime minister's previous liking for attacks on the German capital. This letter, one of the most famous Bomber Command documents of the entire war, began by stating, 'you may like a brief picture of what had been accomplished on the more elastic plans adopted' – a clear reference to the flexibility of his bombing programme as opposed to the increasingly rigid fixations of the Air Ministry and Americans. He then presented statistics on 47 of Germany's cities and towns, which were classified as being 'Virtually Destroyed', 'Seriously Damaged' or 'Damaged'. As a result, Harris continued, 'much progress has been made towards the elimination of the remaining essentials of German war power … I feel certain that Germany must collapse before this programme, which is more than half completed, has proceeded much further'. There remained Berlin – 'the greatest of air battles' – in which:

> We can wreck Berlin from end to end if the U.S.A.A.F. will come in on it. It will cost between us 400 – 500 aircraft. It will cost Germany the war.

This was quite a claim, and critiqued enormously both during the war (by the Air Staff) and by historians ever since. It certainly was a massive assumption to make that collapsing morale in Berlin would collapse Germany's war effort, while it failed to take into account the heavy hand of the Gestapo and its role in negating morale problems among German civilians.

Above all, there was a misjudgement here; the prime minister was changeable. He liked to have Berlin bombed at the time when he was engaged in Grand Alliance summitry – as shown in January 1943 to coincide with the Casablanca Conference and in August 1943 at the time of the Quebec Conference – but by early November he was committed to the invasion of Western Europe and he now viewed strategic bombing as having a definite limit in effectiveness, a view that Harris had clearly misjudged. Only on 13 November did Churchill finally pass a cool comment on Harris' figures about the destruction of Germany's cities in the form of one word: 'noted'. This is the only known response Churchill made to Harris' memorandum; certainly there was no formal reply to it. Harris could expect little else. The prime minister did not condemn but did not condone; to have done the latter would have meant throwing his support behind an alternative strategy that pulled in the opposite direction to an invasion of Western Europe.

The Air Staff meanwhile studied Harris' arguments. The C-in-C had his supporters, namely the Assistant Chief of Air Staff (Intelligence) Air Vice-Marshal F. F. Inglis, who informed Portal that 'we are convinced Bomber Command's attacks are doing more towards shortening the war than any other offensive, including the Russians'. Inglis believed that Bomber Command's technical ingenuity in outwitting the enemy could allow the bombing of cities to continue and to thereby win the war quicker than through the specific destruction of German fighter strength and production as a prelude to mounting *Overlord*. However, most of the Air Staff remained alarmed at Harris' approach. On 5 November, Coryton told Portal that the Air Staff did not believe Berlin could be destroyed like Hamburg nor would this win the war – that 'an all-out series of attacks started on Berlin at this time of year, either by day or by night, may well in the event be sporadic and only partially successful'. Above all, the Americans were not ready to tackle Berlin, and for all these reasons 'it is premature to turn the whole of our joint effort on to Berlin'. The Air Staff had little alternative but to oppose the proposed campaign against the city. For, as the official history states, full acceptance of Harris' minute as the basis of British bombing policy 'would, in effect, have meant the abandonment of the Pointblank intermediate objective', which would affect the preparations for *Overlord* and relations with the Americans, both at a government and air force level. Indeed, only a week later, Bufton handed Coryton a draft American plan for an 'all-out' attack on the targets of the Pointblank Directive, this being Operation *Argument* (also known as 'Big Week'), which was described as having 'a decisive effect' upon the air situation for *Overlord*.

The Air Staff's verdict on the recommendations of Harris' memorandum soon emerged. On 12 November Bottomley told Portal that bombing Berlin would not end the war, even if conducted on the Hamburg-style scale of attack, while the Americans would not join in on it. The DCAS concluded:

> I do not think we can afford the casualties which would doubtless be incurred by a series of sustained attacks on Berlin, certainly not until we have still further reduced the G.A.F. fighter force. If our assault on Berlin failed we should find our forces, especially the day bomber force, too weak … In fact if we strike an 'all-out' blow at Berlin now we stand to miss with [both] our 'right' and our 'left'; better to strike later with both … [Harris] should seize suitable occasions when weather and other tactical conditions give him the most favourable chances but should not plan for a sustained and very costly series of assaults. One or two heavy attacks coupled with sustained harassing attacks over a considerable period will have a tremendous morale effect on Berlin … [Instead he] should make every effort to supplement the efforts of the VIIIth Bomber Command by attacking those industrial centres which are closely connected with the production of enemy fighter aircraft.

Portal agreed. The following day he informed Sinclair that 'with regard to the views of the C-in-C, Bomber Command that everything should now be concentrated on Berlin … I think it is much too big a risk at this stage to stake the whole of the future of the day bomber offensive on the belief that Germany would collapse if several heavy and necessarily extremely expensive attacks were made on the capital'. The Air Staff believed attacks on Berlin remained useful, but they would not be decisive, and they should certainly not form the main focus of Bomber Command's effort during the forthcoming winter.

Harris' 3 November memorandum should have been a perfect opportunity for the Air Staff to clarify its views on British bombing policy and the place of Pointblank targets and Berlin in the bomber offensive. But no such statement appeared – until Harris was heavily embroiled in the battle to destroy the German capital. Harris would therefore fight the coming battle increasingly on two fronts: against the Luftwaffe over Germany and against Air Ministry at home. It was hardly a positive beginning to a major strategic air campaign.

THE CAMPAIGN

British bombers on a snowy Lincolnshire airfield during winter 1943/44. The Battle of Berlin would be fought in terrible weather conditions, for both Bomber Command and the Luftwaffe alike. Snow, rain, fog and unpredictable winds would prove frequent flying companions for British and German airmen. (© Imperial War Museum, HU 91951)

I am certain of one thing, and that is that bombing will win this war, as it has so far won every phase of it.

Harris to Trenchard[2], 12 November 1943

Never forget the Battle of Berlin means the virtual destruction of the Enemy's Capital, his national administration, and a large percentage of his most important war production, will in the outcome prove to be the most important of all battles, Air Sea or Land, in the whole war … Nevertheless by your skill and your magnificent devotion you are winning it hands down and well ahead of schedule.

Message from Harris to bomber crews, February 1944

At the morning briefing on 18 November 1943, Harris turned to Saundby and remarked: 'Berlin plan, Sandy – and we'll keep it going as long as we can'. Thus the frustrating, bitter, and costly air campaign of winter 1943/44, known as the Battle of Berlin, re-started. It would be a supreme test of every aspect of Bomber Command, from aircraft, technology and personnel. But why at this moment? The answer is threefold. First, great hopes had been placed in Bomber Command's improvements to aid navigation and bombing accuracy. The key which Harris was waiting for – and which in early November he received – was an enhanced version of H2S, namely Mk III, which operated on a 3cm wavelength that promised a greatly enhanced picture over Germany's larger cities. This new version of H2S had been

2 Marshal of the Royal Air Force Hugh Trenchard

fitted to 26 Pathfinder aircraft by this time. In addition, British bomber aircraft had got a new instrument called the Ground Position Indicator (GPI) that allowed accurate timed runs to be carried out in heavily defended areas. Such technical developments, Harris later wrote, meant it 'was in my judgement the right moment to begin the really heavy attack on Berlin which was so long overdue'. Second, unlike in late August, Harris' Order of Battle by this time was considerably bigger at around 750 heavy bombers, which particularly comprised a greater number of the best available, namely the Lancaster Mk III and the ever-useful Mosquito, despite the vulnerable Stirling and earlier versions of the Halifax still being present. Lastly, there was the issue of time. The commitment to *Overlord* meant a change in the role of the strategic bomber forces in April 1944; consequently, Harris had only four full months in which to deliver on his promise to 'wreck Berlin' and win the war using the hours of darkness as some form of protection. Yet, on the political level, re-starting the Battle of Berlin in mid-November 1943 was altogether less favourable. Behind the scenes, the recommencement of a major air campaign against the German capital received tepid support from the prime minister (he did not reply formally to Harris' memorandum of 3 November), and would be done in the face of increasing doubts amongst senior figures in the Air Ministry. The progress of the campaign did little to allay these fears and in fact saw a bitter schism open up between the Air Staff and Harris over the precise nature of British bombing policy.

The November raids

The Battle of Berlin started with considerable operational intensity and saw four attacks (and several cancelled ones) in the last 12 days of November 1943. This was to be a familiar pattern throughout the Battle of Berlin, in which a number of raids would go ahead before a drop-off in effort owing to either the weather, the phases of the moon or operations against other targets. The campaign was therefore not one of relentless destruction against the German capital but was instead conducted with fluctuating intensity, which crucially allowed both the Luftwaffe and Berlin's citizens precious recovery time.

The first attack was on 18/19 November, when a force of 440 Lancasters took off. Some of the Pathfinders had received the new version of H2S, though many sets failed en route and only five of these aircraft were able to get to the target area. As would be the norm, Berlin was covered by thick cloud, which blanketed the target markers, while not enough sky markers were dropped. In addition, changing wind speeds threw out aircraft timings. For all the effort the raid was unsuccessful, as once again the problems of blind marking had been shown. Bombs did fall on Berlin, but the damage to the city's industrial plants and civilian dwellings was scattered. However, what really caught the eye at HQ Bomber Command was the low casualty rate, with only nine bombers (2 per cent) lost.

'Berlin plan, Sandy'

At Bomber Command Headquarters in High Wycombe, the process of operational planning always began with the ritual known as 'Morning Prayers' – this being the daily conference in which Harris, after listening to the weather forecast and a review of any latest directives from the Air Ministry, took the decision on 'the target for tonight'. The whole process – in many ways so critical and also involving the fate of so many people, both British and German alike – seldom lasted longer than 30 minutes.

The scene depicted here is the morning briefing on 18 November 1943. According to one observer, after he had learned that six special Lancasters fitted with the new 3cm H2S were now available and that the weather forecast over north-central Germany was favourable, Harris rose from his chair at the planning desk and turned to the Deputy Commander-in-Chief Bomber Command, Air Vice-Marshal Sir Robert Saundby. 'Berlin Plan, Sandy – and we'll keep it going as long as we can'. Harris then put on his cap and walked briskly out of the room, his face expressionless. In that one sentence, Harris had restarted the Battle of Berlin – his major strategic bombing campaign that aimed to win the war through the destruction of Hitler's capital. But H2S would prove to be a frustrating tool.

GRAHAM TURNER '18

This was a consequence of the night's operation being a sophisticated 'split attack', designed to fool the German night-fighters. Two British bomber forces crossed into the continent together, with the second force, mostly composed of Stirling and Halifaxes, initially aimed towards Frankfurt as a decoy (as this city had already been subject to a Mosquito feint attack), before turning sharply in order to attack Mannheim/Ludwigshafen. The Germans were able to track both bomber-streams and then got about 120 aircraft airborne – the aircraft from NJG-3 had been temporarily sent to Norway to thwart an American daylight raid on a Luftwaffe airfield near Oslo. Wild Boar tactics were employed and the night-fighters went into action over the target, but they were pulled away from the Berlin-bound force, hence the small losses there. Instead, it turned out to be an expensive raid for the diversionary force as the Luftwaffe shot down 23 aircraft (5.8 per cent), but it helped to divert the Luftwaffe from the Berlin force, which was heavily concentrated in order to be over the target in 16 minutes, another new tactic that night. Such tactical developments probably showed that Harris was acutely aware that on the first night of the re-opening of his offensive against the German capital he could scarcely afford high losses, particularly as this was one major reason for having curtailed the Battle of Berlin back in September.

Weather conditions kept Harris' force away from Berlin until 22/23 November, when Berlin was to be the subject of a maximum effort by 764 aircraft organized into five waves. Such a number was down to the inclusion of Halifaxes and Stirlings, all of which fed into Bomber Command's tactical planning. A direct route to and from the target ('straight in, straight out') had to be adopted because this was the only way these aircraft could get back and forth to Berlin; they simply did not have the range for a more circuitous or less obvious route. It also helped keep the bomber-stream more concentrated (to be over the target in 22 minutes) and thereby prevent the vulnerable Stirlings from becoming dangerously isolated. A direct approach to Berlin also had one other advantage: it allowed the aircraft to carry maximum bombloads, so the tonnage dropped on this night (2,501 tons) would stand for some time as the most bombs dropped in one night. The inclusion of the other aircraft meant no diversionary raids to other targets, but Harris had gambled on the ground fog in northern Germany keeping the Luftwaffe's fighters on the ground. If any were to get airborne, then Mosquitos dropping decoy flares would, it was hoped, draw them away from the bomber-stream. Consequently, this was a quite different operation, in a tactical sense, from the previous one, and shows clearly some of the flexibility which Harris, at this stage of the Battle of Berlin, had in planning an operation.

A 49 Squadron Lancaster, based at Fiskerton (Lincolnshire), is guided into its parking place after returning from the Berlin raid of 22/23 November 1943. Arguably, this was the most effective attack on the German capital during the Battle of Berlin. The crew and plane would be lost on the Berlin operation four nights later. (Photo by Flt Off Miller/ IWM via Getty Images)

Despite the cloud and fog, the new H2S sets meant the bombing was accurate and concentrated around a barrage of well-placed and continuous sky markers and target indicators. This was the first night the PFF's new marking technique, the 'Berlin Method', was used, which was designed to cover the changing cloud conditions over the German capital. The Main Force arrived and bombed these markers, and later arrivals simply dropped their bombs on the glow of the raging fires below, which had been started by a considerable tonnage of incendiaries. Substantial destruction was caused to Berlin's city centre and Charlottenburg, with some

firestorms recorded in places, and damage was done to the Siemens and Daimler-Benz factories. The German air defences were alert and picked up the bomber-stream early, quickly ascertaining Berlin as the target, but Harris' belief that the weather would keep the night-fighters largely on the ground was correct. Harris had gambled – and won. But flak accounted for most of the 26 bombers lost (a loss rate of 3.4 per cent) and, given its low ceiling, not surprisingly the real casualty of this attack was the Stirling, which suffered 10 per cent losses – a clear indication of the danger of sending this aircraft over a heavily defended target. Consequently, Harris soon lost a proportion of his bomber force, for the 3 Group squadrons that operated this aircraft were removed from the Order of Battle for Berlin and soon from operations against German targets altogether. From this point on, 3 Group would only be represented in the Battle of Berlin by the two – later four – squadrons operating the Lancaster Mk II.

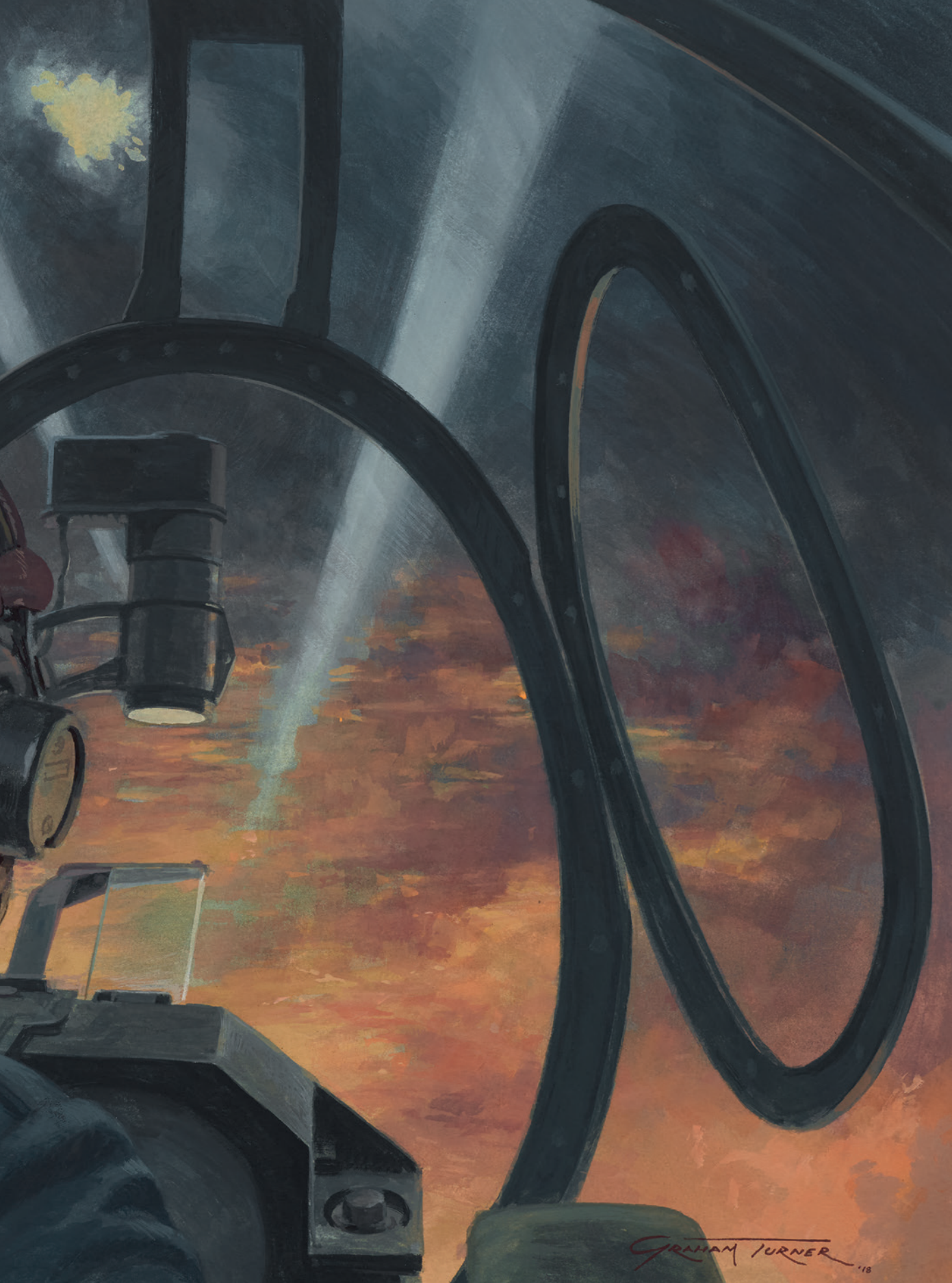
Undeterred, 'to stoke the fires' Harris kept up the momentum against Berlin the following night with an attack by 383 aircraft, mostly Lancasters, using a similar route. Bomber Command, throughout the war, often liked a follow-up raid against a target that was still reeling from the previous night, designed to spread the chaos and strain the city's civil defences even more. With the Stirlings gone and the older versions of the Halifax not operating, it would be (bar ten Halifaxes and eight Mosquitoes) an all-Lancaster raid – which became a notable feature of Berlin attacks over the next two months. This night also showed some of the lengths both sides resorted to in deception attempts. The radioed instructions from the German controllers to the pilots to go to Berlin were picked up in England, and the British then interrupted the German broadcasts. To compensate, the Germans then switched to a female voice, but the British countered with their own German-speaking female voice, who proceeded to supply inaccurate information to the Luftwaffe pilots. Perhaps as a consequence, not many night-fighters were in the skies around the capital and only a handful of bombers were shot down there.

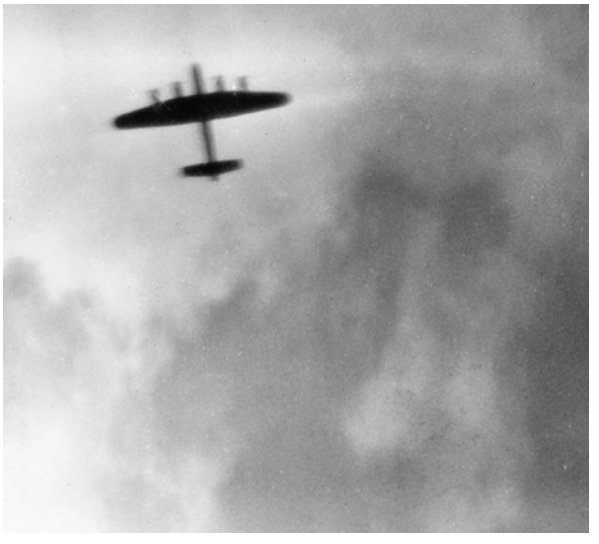
With the bombers passing over Berlin quickly, the Wild Boars' opportunity was soon over. The flak was less ferocious, showing the priority given to the night-fighters on this raid. Yet despite HQ Bomber Command having used such tactical tricks as jamming, the dropping of decoy fighter flares north of the target and a spoof Mosquito raid on a power-station near Cologne, the loss rate had increased to 5.2 per cent. The Main Force crews tended to ignore the Pathfinders' well-placed sky markers and bombed the 11 major areas of fire still smoking from the previous night, thus scattering the attack. Nevertheless, major destruction was still achieved, including the burning of Albert Speer's Ministry of Armaments, which he himself witnessed from the Berlin flak tower, damage to working-class districts, such as Wedding, and the destruction of the Felsch aero-engine, Siemens and BMW plants. Fire engines from other

The raging inferno: 22/23 November 1943

Including the three attacks of August and September 1943, the Battle of Berlin encompassed 19 attacks by the frontline heavy-bomber strength of RAF Bomber Command. On 22 November, a colossal 764 aircraft were sent to attack the German capital, comprising Lancasters, Halifaxes, Stirlings and Mosquitoes. Such numbers of aircraft would only be surpassed by the operations on 20/21 January (769 bombers), 15/16 February (891 bombers), and 24/25 March (811 bombers).

The scene depicted here is of the raging inferno over central Berlin from the perspective of a bomb-aimer's position in the nose-cone of a high-flying Halifax, which was in the last wave of the attack when the target was already well and truly alight. Particularly hard hit were Berlin's central districts, and heading westwards along the Unter den Linden to the areas of the Tiergarten Park, Berlin Zoo, Charlottenburg and Spandau. These areas, owing to the hot and dry summer weather, showed signs of a firestorm, and the smoke cloud was measured by a German aircraft the following day as being at 19,000ft. This attack was probably the most destructive in the entire campaign against the German capital, with an estimated 175,000 bombed out and much damage to residential, industrial and cultural buildings, which included the Kaiser-Wilhelm-Gedächtniskirche, the Charlottenburg Castle, Berlin Zoo, and much of the Unter den Linden.


GRAHAM TURNER '18



A Lancaster over the German capital during the fifth raid of the Battle of Berlin on 22/23 November 1943. (© Imperial War Museum, C 3921)

German cities, including Hamburg, had to be called in, together with 50,000 troops to undertake rubble clearance. These consecutive raids were devastating to Berlin for they had overwhelmed the city's civil defences.

The attacks also brought Harris accolades from his civilian and professional superiors – a timely reminder that attacks on Berlin were enjoyed by all, though more as a few dramatic raids rather than as a prolonged campaign. On 24 November Portal, travelling with Churchill to the Tehran Conference, cabled the Air Ministry: 'All here delighted at the outstandingly successful attack on Berlin. Please convey my heartiest congratulations to all concerned'. Sinclair went further in his praise, adding with great rhetorical flourish:

> My warmest congratulations to you and all ranks serving under your Command on two crushing attacks upon the Nazi Citadel. Berlin is not only the home of Prussian militarism and the capital of Nazi Government but it is also the greatest single centre of war industry in Germany … [Your] attacks these last two nights have reached a new level of power and concentration and have proved that however much he may marshal his guns, searchlights and fighters, the enemy cannot match your skill and resource or the valour and determination of your crews.

If Harris was being misguided in undertaking the Battle of Berlin, then he was hardly being restrained by his superiors. Suitably buoyed, the night of 25/26 November would have been a split-attack on the German capital and Frankfurt – this being a form of attack best suited to countering German freelance tactics at this time. The Frankfurt operation went ahead, with surprisingly high losses (4.6 per cent) and scattered bombing, but the operation against Berlin was cancelled at 2200hrs owing to the weather at the target. This would be a recurring theme, as the Battle of Berlin took place during terrible weather – with ground fog, snow, high winds and, most dangerous of all, icing at altitude. The winter weather either hindered the accuracy of the bombing or cancelled operations altogether (which greatly hampered the frequency of attacks).

Harris maintained the tactic of a diversionary raid for the operation on 26/27 November. While 443 Lancasters went to Berlin, the Halifaxes bombed Stuttgart, and the Stirlings and Wellingtons laid mines off the Dutch coast – all three operations designed to pull the Wild Boar night-fighters in opposite directions. For the Berlin and Stuttgart operations, the aircraft travelled in a single stream with a deceptive route towards Frankfurt, where they split and travelled on to their respective targets. This was a night when such tactics of Bomber Command worked, though the Luftwaffe's performance was poor. The German controllers believed Frankfurt was the target with Mannheim as the diversion, and the night-fighters, under a direct order from Göring, who was then visiting a Luftwaffe command centre, were sent to the Frankfurt area. This was too late, as both British bomber forces were long since heading towards Berlin or Stuttgart. In addition, having flown in and around the Frankfurt area, many night-fighters no longer had the fuel to give chase. Moreover, the defenders of Berlin, namely NJG-5, had all been pulled down to south Germany. Most interestingly, in view of the later development of the Tame Boar method, the only German aircraft to have given battle were a select number of ground-controlled twin-engined aircraft, probably from NJG-1 based in the Low Countries, which had been infiltrated into the bomber-stream and stayed with it all the way to Berlin. With few fighters around, the flak over Berlin was

very heavy. Overall Bomber Command lost 28 Lancasters (6.2 per cent), the Stuttgart force suffered six aircraft lost (3.4 per cent), and another 14 crashed in England. Surprisingly, this was the last time a split attack was used by Bomber Command in operations against Berlin, as it came to favour other tactics such as an even greater concentration of the bomber-stream and 'spoof attacks' by Mosquitoes. Indeed, this attack pioneered the use of a small number of Mosquitoes to drop a colossal amount of *Window* five minutes before the first PFF aircraft arrived, all designed to throw off the German radars and Flak batteries.

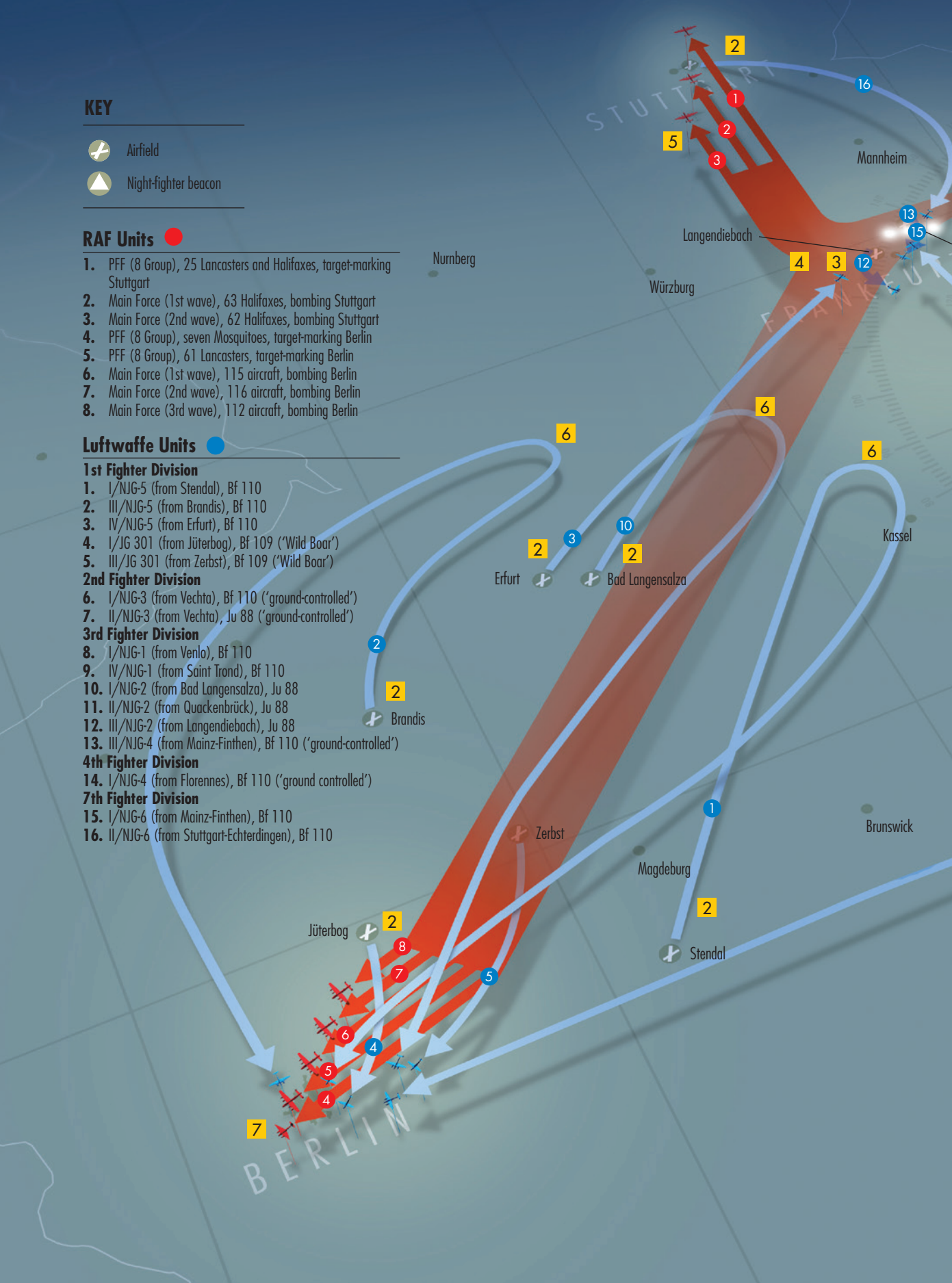
The raid significantly damaged Berlin. In a cloudless sky, the marking for once was good, with TIs burning on the ground and the PFF backers-up accurately dropping their additional markers. The result was a very concentrated attack on the north-western industrial districts, with damage to the high-priority targets of Rheinmetall-Borsig, Alkett (a maker of field artillery) and the munitions plant at Reinickendorf. This night also saw the zoo heavily hit and escaping animals having to be shot in Berlin's streets.

After 26/27 November, Bomber Command did not hit Berlin again for the rest of the month. The campaign's opening scale of attack could not be replicated for two reasons. The first was the weather, which would be a constant impediment – a consequence of fighting this campaign in the deepening northern European winter. The following day's operation was cancelled at 0930hrs due to 'low availability', as the airfields' fog and mist had caused many bombers returning from the Berlin/Stuttgart operation to land well away from their home bases. This did little for maintaining a regular tempo of operations – aircraft had to be armed and aircrews briefed at their home bases. 'Frontal cloud over route and target' cancelled further attacks on Berlin, while an operation to Munich on 30 November/1 December was cancelled at 1600hrs due to 'strong winds and icing conditions en route'.

The second reason was the need to bomb elsewhere. While Berlin was the top target, Harris remained committed to destroying other cities, both for tactical reasons in terms of not concentrating solely on Berlin and the need to complete the city bombing programme. This was seen in December with attacks on Leipzig and Frankfurt. These were early symptoms of one major challenge in sustaining this air campaign: Berlin could not be attacked often enough.

December 1943

Nevertheless, on 2/3 December a force of 458 aircraft once again took off for Berlin. Bad weather at the Main Force Halifax squadron bases prevented it from being a maximum effort. Once again, the bomber-stream took a very direct route across from Holland into Germany precisely in order to allow a concentrated attack with all aircraft over the target in 20 minutes. To compensate, more Mosquitoes were used to support this attack, with diversionary raids on Bochum and Witten and three RCM sorties by 100 Group to jam the German ground controllers. Once under way, the British aircraft faced bad conditions en route, with icing forcing a number of aircraft to turn back. Moreover, unpredictable winds at altitude affected the operation, which loosened the concentration of the bomber-stream on its outbound flight. Stragglers then ended up outside the protective umbrella of *Window*, and a number were picked off by the Wild Boar night-fighters. Over Berlin, the wind had affected the placing of target markers, which became scattered, but this scarcely mattered as the conditions had made a lot of British bombers late and, moreover, pushed them southwards. A lot of the bombing fell outside Berlin, but some scattered damage was done in the eastern and western industrial zones to Siemens, the Erkner ball bearing plant and Berlin's railway stations. But unlike the November attacks there was no concentrated bombing effort or large fires. 115 Squadron, with modified bomb bays on their Lancaster Mk IIs, dropped six colossal 8,000lb blast bombs – an indication of the growing weight and power of Bomber Command's ordnance at this time.


KEY
Airfield
Night-fighter beacon
RAF Units
1. PFF (8 Group), 25 Lancasters and Halifaxes, target-marking Stuttgart
2. Main Force (1st wave), 63 Halifaxes, bombing Stuttgart
3. Main Force (2nd wave), 62 Halifaxes, bombing Stuttgart
4. PFF (8 Group), seven Mosquitoes, target-marking Berlin
5. PFF (8 Group), 61 Lancasters, target-marking Berlin
6. Main Force (1st wave), 115 aircraft, bombing Berlin
7. Main Force (2nd wave), 116 aircraft, bombing Berlin
8. Main Force (3rd wave), 112 aircraft, bombing Berlin
Luftwaffe Units
1st Fighter Division
1. I/NJG-5 (from Stendal), Bf 110
2. III/NJG-5 (from Brandis), Bf 110
3. IV/NJG-5 (from Erfurt), Bf 110
4. I/JG 301 (from Jüterbog), Bf 109 ('Wild Boar')
5. III/JG 301 (from Zerbst), Bf 109 ('Wild Boar')
2nd Fighter Division
6. I/NJG-3 (from Vechta), Bf 110 ('ground-controlled')
7. II/NJG-3 (from Vechta), Ju 88 ('ground-controlled')
3rd Fighter Division
8. I/NJG-1 (from Venlo), Bf 110
9. IV/NJG-1 (from Saint Trond), Bf 110
10. I/NJG-2 (from Bad Langensalza), Ju 88
11. II/NJG-2 (from Quackenbrück), Ju 88
12. III/NJG-2 (from Langendiebach), Ju 88
13. III/NJG-4 (from Mainz-Finthen), Bf 110 ('ground-controlled')
4th Fighter Division
14. I/NJG-4 (from Florennes), Bf 110 ('ground controlled')
7th Fighter Division
15. I/NJG-6 (from Mainz-Finthen), Bf 110
16. II/NJG-6 (from Stuttgart-Echterdingen), Bf 110
STUTTGART
Mannheim
Langendiebach
FRANKFURT
Nurnberg
Würzburg
Kassel
Erfurt
Bad Langensalza
Brandis
Zerbst
Magdeburg
Brunswick
Jüterbog
Stendal
BERLIN

Split attack to Berlin and Stuttgart

26/27 November 1943

EVENTS

The importance of this raid lies in the tactics adopted by Bomber Command, the 'split attack'. This fooled the German air defence controllers who sent most of the night-fighters to Frankfurt, by which time the British bombers had either bombed Stuttgart or Berlin. The Germans never identified the former target and recognized an attack on Berlin far too late. After the attack had finished, some Luftwaffe night-fighters did find stray British bombers but this was too little too late, and losses were lower than normal. Those aircraft lost were a result of the small number of fighters that had penetrated the bomber-stream early on, when it was passing between Koblenz and the critical point north-east of Frankfurt. Nonetheless, the tactical innovation of a 'split attack' – rarely used during the Battle of Berlin surprisingly – had proved effective in pulling the Luftwaffe's night-fighters all over the place.

1. 1800hrs: The British bomber-stream enters western Germany from the direction of southern Belgium, and heads towards a common turning-point north-east of Frankfurt, before diverging to their respective targets. Weather was 10/10ths cloud along the route to 16,000ft but broke to 3–6/10ths, with occasional tops towering to 18,000–22,000ft. Fifty miles from Berlin the cloud dispersed and all was clear, with good visibility. Stuttgart was under 7/10ths with fair visibility.

2. 1810hrs: The 'running commentary' of the German air-defence controller begins directing aircraft from NJG-1, 2, 5 & 6 ('Tame Boar'). Some SN2-equipped Bf 110s from NJG-6 infiltrated the bomber-stream early and stayed with it all the way to Berlin, thus accounting for a considerable number of Lancasters on this night, especially on the 50-mile stretch between Koblenz and the critical Frankfurt turning-point. No aircraft of NJG-3 and 4 were heard working the running commentary although some aircraft from these units were active owing to ground controls that directed them to the rough vicinity of Berlin and Frankfurt, respectively. 'Wild Boar' units stationed near Berlin also proceeded to the German capital.

3. 1945–1955hrs: At a point north-east of Frankfurt the bomber-stream begins to follow their divergent paths. Heading to Berlin, on a north-east bearing, were the Lancasters of 1, 3, 5 and 8 Groups flying between 15-25,000ft . Going directly southwards to Stuttgart were the Halifaxes of 4, 6 and 8 Groups and 20 Lancasters of 1 and 8 Groups. At varying rates the British bombers drop Window: one bundle every two-minutes up to 20 miles from the target, one bundle every half-minute within 20 miles of the target in both directions, and one bundle every minute on the way home.

4. 2003-2020hrs: The Luftwaffe made attempts to follow both raids but their fighters were unable to reach the targets areas. As one author mentions, Göring was in Generaloberst Hubert Weise's flak command centre in Frankfurt as the night's drama unfolded and ordered all available fighters to the Frankfurt area. Flares were dropped over Frankfurt and Wiesbaden at 2003hrs and at 2020hrs Frankfurt was finally, but erroneously, labelled by the German air-controllers as the main objective.

5. 2022–2059hrs: The bomber force reaches Stuttgart and opens its attack two minutes early. The visual-markers fell 2-miles E.N.E. of the aiming-point. The bombing is scattered but serious damage was done to the major target in Stuttgart, the Daimler-Benz works. The Adolf Hitler Stadium is also wrecked. Cloud did not hamper the bombing, but it did thwart Stuttgart's ground-defences. There were few searchlights and the AA guns only fired a moderate barrage up to 20,000ft. No aircraft losses were observed over Stuttgart.

6. 2108hrs: Flying at 15,000–20,000ft, aircraft of NJG-5, being brought southwards to Frankfurt, were ordered to turn back towards Berlin but were unable to reach there in time.

7. 2110hrs: In good visibility, and with little cloud, the British heavy-bombers flying at an average height of 20,000ft commence their attack on Berlin three minutes early, and it lasts 24 minutes. The bombing is 6–7 miles north-west of the city but this inaccuracy is not so critical in a city as large as Berlin, and damage is done to the industrial suburbs of Reinickendorf and Tegel, home to numerous important works of Rheinmetall-Borsig A.G. and Dornier. Numerous searchlights were active and a moderate barrage was maintained up to 18,000ft with light-flak 'hosepiping' to 16,000ft. The Berlin area saw more night-fighters sighted than at Frankfurt but fewer combats. Nine aircraft were lost over the German capital, seven to flak and two to fighters.

8. On the homebound journey many aircraft strayed off course due to unexpected high winds, and either flew over the heavy-flak areas of Magdeburg, Hannover and Bremen, which claimed two bombers, or to the controlled night-fighters operating between Bremen and the Ruhr, which shot down four aircraft. Most of the night-fighters were Bf 110s or Ju 88s but there were also Fw 190s and several unusual types, including four Fw 200 Condors (near Frankfurt and at Berlin) and one Wellington (near Frankfurt).

A Handley Page Halifax silhouetted against incendiary fires during the destructive raid on Leipzig on 3/4 December 1943. (© Imperial War Museum, C 3972)

As part of the defence of Berlin, the Germans also deployed several decoy sites that lit up to simulate a British attack, using both the colour of TIs and gradually setting the site on fire to simulate incendiary bombing, with all the accompanying explosions and searchlights. But it was early identification of the target that had allowed many fighters to operate in the Berlin area – German controllers having told the pilots to ignore any instructions to land because of the fog – and the German Wild Boar aircraft extracted a gruesome toll of 40 aircraft (8.7 per cent). The cause of this – and an early warning for HQ Bomber Command – was the predictability of attacking Berlin and also the direct route to the target, which meant the Luftwaffe was soon waiting and had been far from fooled by the Mosquito spoof attack in the Ruhr. Because of the wind conditions, the PFF found difficulty marking and the bombing was scattered over the south of the city and its surrounding countryside.

Thereafter, Berlin was only raided three more times that month owing to the weather and phases of the moon. The next Berlin operation came on 16/17 December, with an early take-off time in order to avoid being in the moonlight over Germany. Moreover, in his quest to keep the air offensive alive, Harris had gambled on the weather: the fog over northern Germany would probably keep the Luftwaffe grounded but it would also affect the British bases on their return. Nonetheless, it was to be another all-Lancaster raid and a 'straight in, straight out' route. In one way, this was understandable; Harris, again not using his Halifax force, wanted to maximise the tonnage of bombs dropped by his Lancaster force, but, at the same time, such a route was unimaginative – and, worse still, predictable. Like many of the attacks during the Battle of Berlin, the outbound route involved going over Holland, where the elite NJG-1 was based, and they attacked the bomber-stream early. But fog did keep a good proportion of the Luftwaffe grounded and only experienced crews were ordered into battle. The Germans were not fooled by the British countermeasure of five Mosquitoes dropping flares south of the capital in an attempt to pull the Wild Boar night-fighters there, but the controller kept the night-fighters some distance away in any case, believing that Berlin on this night was part of a deceptive route to another target, such as Leipzig. Consequently, the British bombers experienced skies over Berlin that were relatively clear of night-fighters and none were shot down in the target area. Wild Boar tactics, on this night, had failed. Nonetheless, twenty-five (5.1 per cent) British aircraft were shot down, mostly on the outbound route. It was probably that night, 16/17 December, that Bomber Command first encountered two new devices that would come decisively to change the entire aerial conflict during the Battle of Berlin, namely the SN-2 radar and the Schräge Musik cannons.

Overall it was a tough night for Bomber Command: on their return, the home bases were badly affected by fog and in the chaos and confusion 27 British aircraft crashed. Others managed to land with the help of Fog Investigation and Dispersal Operation (FIDO) – a petrol-fuelled line of burner jets either side of the runway that dispersed fog. In addition, while the bombing had fallen within the city, causing random destruction to civilian dwellings and railways, this night's raid again lacked the concentration and destructiveness of the November raids. Blind marking was initially good but the attack then spread in different directions for no obvious reason. This night also saw another development in the electronic war. 141 Squadron Beaufighters from 100 Group conducted the first ever *Intruder*

patrols using their *Serrate* homing device, which detected electronic emissions from German night-fighters. This would become a feature of British operations from this point onwards, and allowed British aircraft to attack German night-fighters 'at source' near their home bases in the Low Countries. Indeed, it was on the next Berlin operations on 23/24 December that an *Intruder* patrol destroyed its first enemy night-fighter. The main attack was an all-Lancaster effort, with the Halifaxes once again dropped from operations. Bad weather over their airfields, a belief that Frankfurt was the target and a Mosquito spoof attack on Leipzig that further confused the German controller all contributed to a poor Luftwaffe performance, and only 16 British aircraft were lost (4.2 per cent). This, together with extremely favourable weather conditions of little cloud and light wind – an evening where sky markers would not drift away and even ground TIs on the aiming point might be seen – meant there was a great opportunity for Bomber Command to inflict a serious blow on an undamaged part of Berlin. But once more the unknowns of undertaking bombing operations in this era came into play. Few PFF aircraft had released their markers owing to problems with H2S or having abandoned their runs over the target because of the flak. As a result, when the Main Force arrived there were few markers to aim at and aircraft simply unloaded without targeting. Many bombs fell outside Berlin, though the south-eastern suburbs were hit, and so too was the target of the Erkner ball bearing plant, a high priority for the Air Staff.

Six nights later came the final Berlin raid of 1943. Largely clear conditions meant there were both some well-placed sky markers and ground TIs (the 'Berlin Method' of marking), but the bombing went astray and hit the already damaged south and south-eastern parts of the city. This was another missed opportunity to deliver a concentrated heavy attack on an alternative area of the city, particularly as Harris had ordered a maximum effort of over 700 aircraft, with 2,222 tons of bombs dropped. Although this figure included Halifaxes with their restricted bomb bays, they were made more useful on this raid by loading them with incendiaries.

The attack also suffered only light losses of 20 aircraft (2.8 per cent), making it doubly unfortunate that the results were not better. The low losses were a confirmation in the eyes

Officers and pilots of the Luftwaffe's night-fighter arm watch as yet another operation by RAF Bomber Command heads towards Germany. (Photo by Willi Ruge/ullstein bild via Getty Images)

of HQ Bomber Command that it was gaining the upper hand in the tactical battle. The raid included two spoof attacks by Mosquitoes on Magdeburg and Leipzig and the bomber-stream itself was deceptively routed towards Leipzig before turning north-westwards for Berlin. These ruses distracted the Germans and caused the night-fighters to go to the two other locations, and not the German capital (they arrived there too late). But fog had kept the bulk of the Luftwaffe grounded, especially NJG-1 in Holland, with only experienced crews once again operating – a reminder that the Germans had as many problems with the weather as with Bomber Command. Yet such optimistic assessment about the tactical superiority of the RAF would be crudely exposed during the following month. Overall, December was something of an anti-climax in the Battle of Berlin, with only four major raids. In total, eight attacks had been made, and the Battle of Berlin was half over. Harris was nowhere near achieving his overriding aim. With days or even weeks between raids, Berlin could recover from each strike. If Berlin was to be completely destroyed then a greater effort would be needed in the new year.

Two other operations during this period, mounted both to stretch the German air defences throughout the Reich and also to attack useful targets, were against Leipzig and Frankfurt. The former, a long-distance target in the same area as Berlin, was attacked on 3/4 December. On this night, the German capital was part of Bomber Command's deception measures: a Mosquito feint attack and the Main Force were deceptively routed towards the German capital. These measures worked well to throw off the night-fighters that had got into the bomber-stream: all went to Berlin after seeing the Mosquitoes commence their diversionary attack. As a result, there were no fighters over Leipzig. The lack of resistance over the target, coupled with accurate marking by Pathfinder aircraft using the latest H2S set (which was also more effective over a smaller city), helped the attack to be very successful, with a firestorm that burnt out the city centre and caused major damage to the Messerschmitt plants. But the losses came on the return journey when some bombers flew off-track towards Frankfurt and encountered serious resistance; half of the 24 aircraft lost (4.6 per cent) were shot down there.

The second major attack was on 20/21 December against Frankfurt by 600 British bombers. Fairly thick cloud over the target prevented its visual identification, and a decoy site using the correct colour TIs meant the bombing was pulled 5 miles to the east and south-east of the city centre, although the later creepback fell towards the city and caused scattered damage. But the raid was more notable for how the Germans' early plotting of the bomber-stream at the English coast allowed the ground controllers to follow the raid all the way to Frankfurt. The defenders were not fooled by the diversionary raid on Mannheim either, which was too close to the main target to be effective. This meant stiff Luftwaffe opposition, but along the outbound route, not at the target. This was because a new German tactic was being pioneered in which night-fighters would congregate around radio beacons and then wait for the British aircraft to arrive. The advantage was that night-fighters could get into the bomber-stream and simply follow it to the target, thus reducing substantially the effect of spoof raids and/or deceptive routeing. Indeed, as a further enhancement to this method, some Luftwaffe night-fighters also dropped long lines of flares to mark the location of the bomber-stream. The Luftwaffe's success in this air battle was reflected in Bomber Command's casualty rate of 41 aircraft lost (6.3 per cent), which showed just how costly even a non-Berlin target had become by late December 1943.

Taking stock

Frankfurt had taught HQ Bomber Command a valuable lesson, which would force tactics to change in operations against Berlin (though by no means all of them): the bomber-stream had to change its direction a lot more on its way to a target. Such a change allowed greater scope for successful deceptive routeing and Mosquito spoof attacks, and it may have gone some way towards lowering British losses on the final two Berlin raids of December 1943.

Joseph Goebbels, who was not only the Reich's Minister of Propaganda but also the Gauleiter of Berlin. Here he meets Berliners in the street after the RAF's bombing raid on 26/27 November 1943, and Luftwaffe officers at the Ministry of Propaganda on 1 January 1944. Goebbels' diaries commented frequently on the British night bombing of Germany's cities, including Berlin. (Photo by ullstein bild via Getty Images)

Yet such a move was also a trade-off. Bigger course-changes meant a longer operation, with consequent effects on aircrews and fuel consumption, the likely absence of the shorter-range Halifaxes, and a reduced bomb tonnage. This was not a welcome prospect to Harris as he still sought to destroy Berlin and win the war in the remaining three months before Bomber Command's formal transfer to pre-*Overlord* targets in April 1944.

The offensive against Germany's other cities would continue. Back in November Harris had already stated that 'Germany must collapse before this programme [against Germany's cities],

A 'night off' from Hitler's capital: Frankfurt-on-Main on 20 December 1943

The period of the Battle of Berlin was not solely about attacks on the German capital; to have focused purely on Berlin would have meant a bombing campaign that was too predictable and thereby made it easier for the German air defences. It also meant a neglect of Germany's other cities, although the destruction of their urban areas and war industries conformed to the general aim of the Casablanca/Pointblank Directives. The target for the aircraft of RAF Bomber Command was Frankfurt-on-Main. According to the Air Ministry's 'handbook' on Germany's cities, the so-called *Bomber's Baedeker*, Frankfurt was: 'the commercial, industrial and cultural metropolis of the Upper Rhineland', which contained an important railway junction, an extensive military training centre and barracks, and the large chemical plant of I. G. Farben.

In this scene, the 103 Squadron Lancaster Mk III – JB-454 (PM-S) – piloted by Flight Sergeant H. S. Rathbone (and with the author's great-uncle, Sgt R. Howells, as flight engineer), has been attacked in the target area by the Junkers Ju 88C-6 of 1/NJG-2 piloted by OFw R. Winn. The German aircraft had raked the Lancaster's fuselage right down the right-hand side and set an engine on fire, probably in a *von unten hinten* attack, which was from astern and slightly below the British aircraft, with its forward machine-guns pointing upwards. Yet Winn's aircraft was itself hit in the port engine by the rear-gunner of the British bomber. The Lancaster crashed at Marjoss, some 10 miles east-north-east of Frankfurt, and resulted in three POWs and four killed. Losses were heavy on this night (6.3 per cent), owing to a very high level of night-fighter activity (the raid was plotted and followed by the Germans particularly early), and the diversionary attack on Mannheim failed to draw fighters away from the Frankfurt operation. The bombing – owing to cloud with tops at 8,000ft at the target that misled the Pathfinders' target-making and a decoy fire lit by the Germans – led to a scattered raid, which, nonetheless, still caused serious damage in Frankfurt's eastern suburbs to a large number of cultural, historical and public buildings.

GRAHAM TURNER '19

North Sea
HOLLAND
Elbe
5/6 January 1944
Stettin
Berlin
14/15 January 1944
Brunswick
Weser
Magdeburg
21/22 January 1944
26/27 March 1944
Essen
GERMANY
19/20 November 1943
Leverkusen
Leipzig
3/4 December 1943
19/20 February 1944
Rhine
25/26 November 1943
20/21 December 1943
18/19 March 1944
22/23 March 1944
Frankfurt
Main
Schweinfurt
24/25 February 1944
LUX.
CZECHOSLOVAKIA
Ludwigshaven/Mannheim
18/19 November 1943
Nuremberg
30/31 March 1944
Stuttgart
Danube
FRANCE
26/27 November 1943
20/21 February 1944
1/2 March 1944
15/16 March 1944
Augsburg
25/26 February 1944
Rhine
N
0
100 miles
0
100km

OPPOSITE OTHER MAJOR OPERATIONS DURING THE BATTLE OF BERLIN, NOVEMBER 1943–MARCH 1944

which is more than half complete already, has proceeded much further'. Such views drew favourable comments from Portal: on 22 November the CAS wrote that 'social disruption threatened the structure of the entire home front', while on 3 December he further stated that there was 'no shadow of doubt' that Bomber Command had put German morale at rock bottom and was 'half-way along the road of industrial devastation towards the point where Germany will become unable to continue the war'. This, then, was the context in which Harris, on 7 December, submitted another memorandum that reiterated this theme even further: the collapse of Germany by 1 April 1944, he declared, would be secured if he could undertake 15,000 sorties against the main cities by Lancasters – the aircraft Harris believed would win the war. With the Americans not joining this effort, Lancaster production (and repair) had to be improved to increase the gap between production and losses; the supply of further navigational aids had to be maintained; and average losses should not exceed more than 5 per cent. If these conditions could be maintained, then his force would win the war by spring 1944. It was a very bold claim, ironically written at the time when Bomber Command was again grounded due to the weather. Bomber Command still had no idea as to the extent of the damage it had done to Berlin. The Air Staff were alarmed at Harris' obsession with city bombing, and would come to dispute his claims bitterly.

Yet once again Harris, despite increasingly coming into dispute with the Air Staff, was not restrained by the prime minister. Indeed, the situation was quite the opposite. On 20 December Churchill sent Harris his personal congratulations for Bomber Command's aircrews 'who have taken part in the series of Great Battles over Berlin and Leipzig'. The C-in-C, by implication, must have felt that his bombing campaign against Berlin and Germany's other cities was continuing to receive strong prime ministerial endorsement. Though presuming too much about the extent of Churchill's backing (he was fully committed to the invasion of Western Europe by this time), Harris replied that '[his] support, advice and unfailing encouragement through four dark and strenuous years has been the mainspring of our effort'. Consequently, it is little surprise that this was exactly the time when Harris was telling the Air Staff that he would not divert from Berlin to attack Schweinfurt. But overall this was a time of taking stock for Bomber Command. On 17 December, the intelligence staff at HQ Bomber Command produced its first report on the battle under the non-too-subtle title of *Götterdämmerung*. Unsurprisingly, it stated that Berlin – its administrative machine, its war industries and 'above all' its morale – had 'suffered a deadly wound' from which it 'cannot recover'. Such views demonstrated presumptuous and wishful thinking about the merits of continuing what had been started. But for those who had launched the campaign, arguing otherwise was to play into the hands of those, especially within the Air Ministry, who at this time increasingly preferred a more focused bombing campaign on specific target systems, such as German fighter aircraft industries.

Incredibly, despite the grand objectives behind the Battle of Berlin, only twice during the campaign did Bomber Command get photo-reconnaissance evidence as to what was being achieved. The first was on 20 and 21 December (the second time being on 19 February 1944), with daylight aerial photographs that showed the extent of the damage to Berlin after six major attacks. These showed severe damage throughout the city centre from Charlottenburg in the north-west to Wilmersdorf in the south-west, which was an area of some 8 square miles that had been burnt out, and also heavy damage to the industrial districts of Tegel, Reinickendorf and Spandau. In the city centre many government buildings along the Wilhelmstrasse had been hit, including the Reich's Chancellery, the War Office, the Ministry of Armaments and Munitions, the Gestapo

headquarters, and the former British and French embassies. In total some 3,200 acres had been destroyed – all of which seemed proof of Harris' argument. Berlin's urban areas and industries had been severely damaged in exchange for British aircraft losses that hitherto had been manageable, and though he had stated back in August that Berlin would need 40,000 tons of bombs over a prolonged campaign, Harris looked to be on the way to achieving this.

But aerial photography could never show how close Harris was to his objective – winning the war by collapsing German morale. All it showed was that Bomber Command was simply hitting something. Harris' air campaign had no barometer for measuring effectiveness; it simply had to carry on until the overriding aim actually happened. Nonetheless, the photographic evidence of damage to Berlin seemed proof that Bomber Command had mastered some of its difficulties of the previous autumn over target marking and bombing concentration. Yet still a lot remained unanswered. As the Air Historical Branch's (AHB) narrative noted, 'no reliable evidence was available, therefore, regarding individual attacks, by which to judge the success of the tactics employed, or to guide the selection of successive aiming points'.

As to the two combatants, the opening two months of the campaign had shown that Bomber Command had not solved the problem of blind marking. H2S Mark III had, in fact, made little contribution. The very successful attacks on Berlin, only two out of eight, seemed to have been more down to luck than anything else; more worrying was the number that had gone astray, especially the attacks of December. Beyond this, Harris remained concerned about the number of Lancasters available (which seemed fixed at around 400–470), the Pathfinder losses (which would worsen substantially in January 1944) and some indications of falling morale due largely to battle fatigue. But in terms of aircraft losses, things were about to get much worse as the Battle of Berlin carried on through January. That this happened was because the Luftwaffe's night-fighter force had greatly improved its technology and tactics and was, in December 1943, on the cusp of being at its zenith.

The bitter month of January 1944

Despite the weather, which had slackened the pace of attacks against Berlin throughout December, Harris remained buoyed by the damage already inflicted on the city and the prospect of completing its destruction, alongside Germany's other cities, by his own deadline of 1 April 1944. Losses seemed manageable, as the two Berlin raids with a loss rate over 5 per cent were apparently dismissed as flukes. Bomber Command's tactics of deceptive routeing and spoof raids, and its technological devices that jammed German radar and radio communications, were all perceived to have got the better of the German night-fighters. But this was too presumptuous: with the ground-controlled radio in Stuttgart jammed by the British, the Germans simply used the national airwaves to play music that signified the target or instructions to the pilots. Above all, the SN-2 radar and devices to home in on bombers' H2S and Identification Friend or Foe (IFF) equipment helped the *Nachtjagdgeschwader* inflict substantially higher losses. January 1944 was to be the bitterest and the most intense month of the campaign, with six major attacks, including three within the last four nights of the month. This involved over 3,200 sorties and just over 13,000 tons of HE bombs and explosives, dropped in cloudy conditions that necessitated the 'Berlin Method' of maintaining a continual supply of sky markers and ground markers.

The ninth raid of the Battle of Berlin was on 1/2 January 1944. The Halifax squadrons were once again noticeably absent, and it was the Lancasters who continued to bear the brunt of the campaign. Worryingly for Harris, it proved to be an expensive attack, with 28 aircraft (6.7 per cent) lost. A take-off delay because of the weather also forced a change in the outbound route. No longer going over Denmark and the German Baltic coast, the

bombers' track was switched to a direct approach to Berlin over the now-familiar 'hornet's nest' of Luftwaffe night-fighters and radars in Holland. With precious little course-change, the Germans were not deceived by the Mosquitoes' feint attack on Hamburg. Moreover, the Germans tracked, found and intercepted the bomber-stream early, not over the target but on the 390-mile outbound route from the Dutch coast to Berlin. The Luftwaffe suffered a good number of aircraft losses owing to the winter flying conditions, but they extracted a heavy price from Bomber Command. Bombing was again scattered throughout Berlin, as thick cloud over the target disguised the ground markers and the wind blew the sky markers away from the aiming point. The Pathfinders also suffered losses and H2S failures that left gaps in the marking. Once again, the south and south-east districts were hit and attacks seemed to be finding the suburbs. It was not a good start.

Harris sent his Lancaster squadrons against Berlin the following night, undeterred by the snowy conditions and the falling morale of his crews. The routeing was unimaginative and followed a similar path to the previous night, but with a small kink north-north eastwards at the end so the bombers could hook around to Berlin from the north-west. Once again the bombers were located over the Dutch coast and some 200 German night-fighters were held at radio beacons in the Bremen-Hanover area, but this Tame Boar interception was ineffective as they were not released to infiltrate the bomber-stream. Instead, the night-fighters attacked over the target area, showing that the Germans were employing the Wild Boar method as well; the bombers' final 'kink' turn gave the night-fighters precious time to get airborne over Berlin. Flak was kept at 20,000ft and searchlights illuminated the Lancasters. Bomber Command lost 27 aircraft (7 per cent) and 8 Group suffered particularly high losses. Their nine aircraft shot down made an unsustainable total of 19 Pathfinder crews lost over two nights. In return the British only achieved scattered damage throughout Berlin, with no firestorms or large-scale destruction, and many bombs fell in the surrounding countryside. Bad weather had delayed the Main Force so there were few markers to be found. It was a very disappointing attack and Bomber Command's accuracy and ability to inflict heavy damage seemed to be worsening. This was not a good sign at this stage.

Berlin was then not attacked again for nearly three weeks, partly due to the weather and phases of the moon, but Bomber Command also had to attack other targets, to divert German air defences and fulfil Air Ministry instructions. In the next two operations Berlin was used as the diversion, while the main bomber force went on 5/6 January to Stettin – generally considered the port of Berlin and important for supplying German armies in Russia. These British tactics of using Berlin as the target for a Mosquito spoof raid succeeded in luring many fighters over the German capital. Stettin meanwhile was clear, with some night-fighters only turning up towards the end of the attack, and this allowed for a successful raid on the central zones of the port. The Stettin attack saw lower bomber losses, aided by the failure of radars in northern Germany. Then, to complement an earlier daylight attack by VIII (US) Bomber Command, Harris sent his force to Brunswick on 14/15 January, but this attack was something of a disaster for Bomber Command. Despite being a small city that should have been a good target for H2S, the bombing largely hit the countryside to the south, leading Bufton to accuse Bomber Command of being only in 'the big city groove'. But it was the casualties that made it the 'nightmare of Brunswick', with 38 aircraft lost (7.6 per cent). This operation heralded just over two weeks of very high casualty rates for Bomber Command, among all groups but particularly the Pathfinders, which had really suffered on the Brunswick operation, losing 11 crews. Early detection by the Germans and a running commentary that started soon after saw the night-fighters get into the bomber-stream around the hot spot of the Bremen area, following them to and from the target – a classic Tame Boar interception.

Bomber Command returned to Berlin on 20/21 January, with the 11th effort of the campaign. This was a maximum effort of 769 aircraft, including the Halifax squadrons.

EVENTS

This shows RAF Bomber Command's operation against the Baltic German port of Stettin, which was attacked by 348 British heavy bombers, on 5/6 January 1944. It encapsulates a tactical dimension of bomber operations in which diversionary attacks were designed to draw German defenders away from the main target. On this particular night, ten Pathfinder Force Mosquitoes attacked Berlin, which successfully lured the German night-fighters to the capital, thus leaving the Main Force of British bombers relatively free to bomb the main target. The timing of the two attacks was almost simultaneous: the Mosquitoes attacked Berlin from 0322 to 0330hrs and the heavy bombers bombed Stettin from 0335hrs until 0410hrs. Towards the end of the attack, some German night-fighters did catch the British heavy bombers in the Stettin area, which included a collision between a Lancaster and Ju 88.

1. 1937–1949hrs and 2100–2310hrs: Earlier in the evening Mosquitoes from 8 Group launch spoof raids (not visible on this illustration) on Essen, Solingen and Krefeld that are designed to make the German air defences believe a target in the Ruhr is to be attacked.

2. 0322–0330hrs: The evening's main attacks came very late in order to fool German air defences into thinking that Bomber Command was not going to operate. It starts with ten Mosquitoes, flying between 26–29,000ft, conducting a feint raid on Berlin, which was covered by 10/10ths cloud, and it would be critical for the success of the main operation. The Mosquitoes drop target indicators and HE bombs to simulate the beginning of a major attack on the German capital – all designed to fool the German air-defence operators.

3. 0320hrs: Shortly after the Mosquitoes commence their attack, the German night-fighter controller states that Berlin is the target and directs all fighters there. Some of the Luftwaffe's night-fighters have flown parallel to the bomber-stream and have laid a flare path towards the German capital. As a result, few air combats take place in the early part of the raid, as a good proportion of the Luftwaffe's night-fighters have been lured to the wrong place. The German air defences were not helped by the mechanical breakdown of radars north and west of Berlin so the heavy bombers' route to Stettin was not seen on the ground.

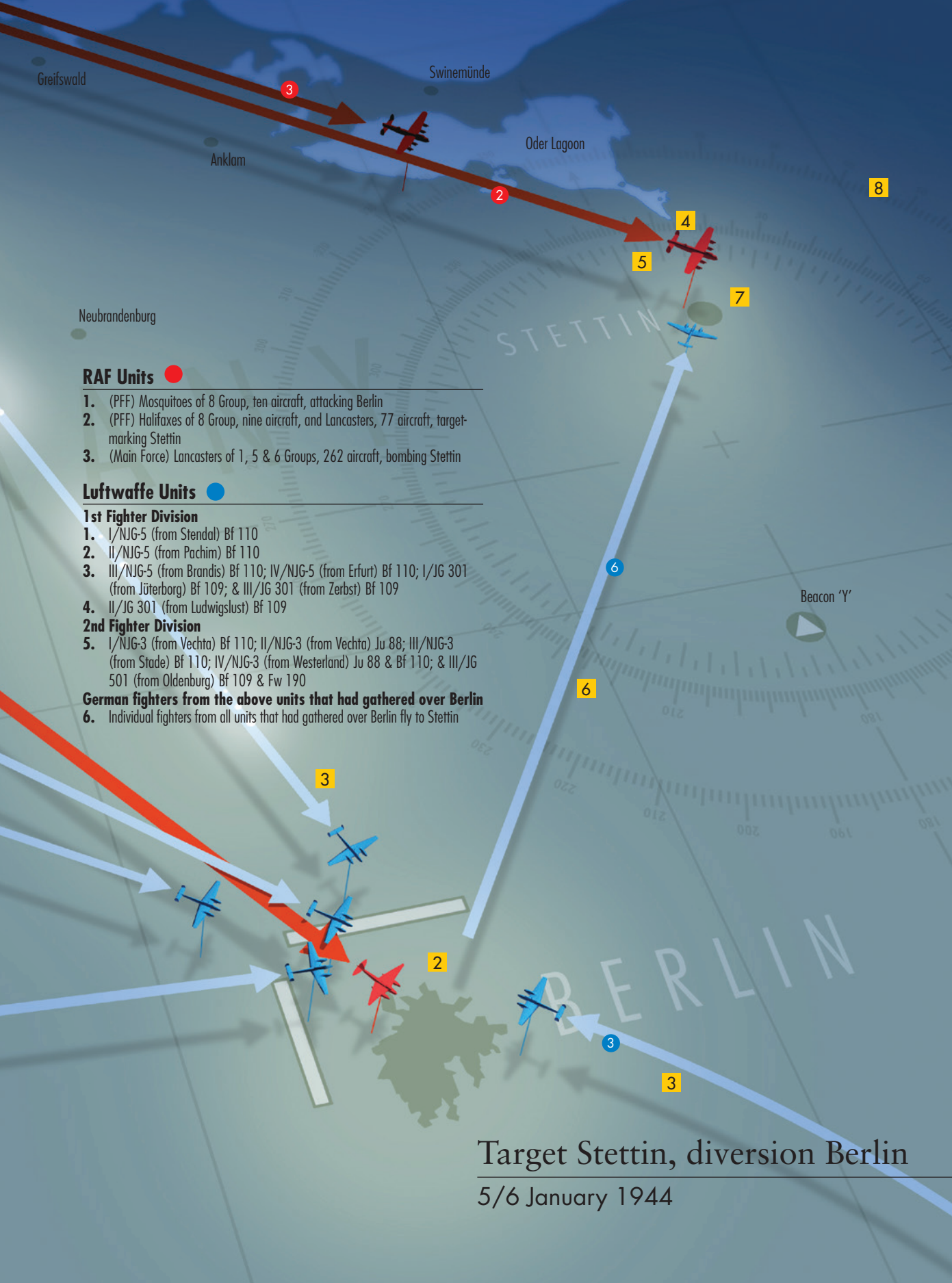
4. 0335hrs: Within minutes of the spoof raid on Berlin, the Pathfinder aircraft, comprising nine Halifaxes and 77 Lancasters, commence the night's main attack on Stettin – Germany's largest Baltic port – which played an important part in the seaborne supply arrangements for the Eastern Front. Stettin contained shipyards, a major dock area and, in an outlying district 8 miles to the north, lay the giant synthetic-oil plant at Pölitz. The attack opens on time. Since the target was clear of cloud, the 'Newhaven' marking technique was used and the Pathfinders' target-marking continued for 13 minutes. The aiming-point was marked accurately.

5. 0345hrs: Zero Hour over Stettin. The Main Force, approaching the target from the north-west, commenced the bombing attack from an average height of 17,500ft. However, the bombing was centred 2 miles west of the aiming-point, probably because crews, having been instructed to aim at the centre of all visible greens, were distracted by TIs dropped short of the target by the primary blind markers. Within 6 minutes, the target area was covered with smoke from the fires burning, and no more photos were plotted in the built-up area.

6. 0351–0410hrs: The Luftwaffe night-fighters, having waited over Berlin at some 20,000ft, saw the attack on Stettin begin and a good number, without waiting for instruction, flew there to attack the RAF force. In the target area there were sightings and combats with various types of night-fighters including Ju 88s (seven), Bf 109 (five), Fw 190 (five), Bf 110 (two), and three unidentified twin-engined aircraft. Two British aircraft are lost. There was moderate heavy flak in a loose barrage at heights from 15,000ft to 22,000ft, though this fell away towards the end of the attack. Moderate light flak was fired up to 18,000ft.

7. Two other combats, which result in two losses, occur on the overland leg of the homeward route. At 20,000ft, a 5 Group Lancaster collides with a Ju 88 which then crashed in flames.

8. 0410–0425hrs: British bombers leave Stettin by flying northwards to the Baltic Sea and in the direction of southern Sweden. They leave the central district and town centre of Stettin heavily damaged by fire, with a number of factories hit. Given the distance involved – a 1,600-mile round-trip – the aircraft of Bomber Command would not reach their bases until well into the morning.



RAF Units

1. (PFF) Mosquitoes of 8 Group, ten aircraft, attacking Berlin
2. (PFF) Halifaxes of 8 Group, nine aircraft, and Lancasters, 77 aircraft, target-marking Stettin
3. (Main Force) Lancasters of 1, 5 & 6 Groups, 262 aircraft, bombing Stettin

Luftwaffe Units

1st Fighter Division

1. I/NJG-5 (from Stendal) Bf 110
2. II/NJG-5 (from Pachim) Bf 110
3. III/NJG-5 (from Brandis) Bf 110; IV/NJG-5 (from Erfurt) Bf 110; I/JG 301 (from Jüterborg) Bf 109; & III/JG 301 (from Zerbst) Bf 109
4. II/JG 301 (from Ludwigslust) Bf 109

2nd Fighter Division

5. I/NJG-3 (from Vechta) Bf 110; II/NJG-3 (from Vechta) Ju 88; III/NJG-3 (from Stade) Bf 110; IV/NJG-3 (from Westerland) Ju 88 & Bf 110; & III/JG 501 (from Oldenburg) Bf 109 & Fw 190

German fighters from the above units that had gathered over Berlin

6. Individual fighters from all units that had gathered over Berlin fly to Stettin

Target Stettin, diversion Berlin

5/6 January 1944

The target was cloud-covered but the PFF utilized the Berlin Method and the bombing hit the eastern side of the city, with damage to urban areas, factories and railways. The trend of bombs landing outside Berlin continued, suggesting some crews were dropping early rather than going right up to the target markers. The most interesting developments were in German tactics and British routeing.

The Luftwaffe's clear preference of infiltrating the bomber-stream on its route to and from the target forced a tactical change from Bomber Command. Routes would become a lot more meandering in an attempt to make it less easy to follow the British bombers. This meant operations became longer, with fuel loads higher but bombloads lighter – though on this night Harris compensated for that by including the older marks of Halifax on the Battle Order, giving the highest tonnage yet dropped on Berlin (2,456 tons). It would prove a grim mistake. British routeing tactics were invalidated by early detection of the bombers over the North Sea, which set in motion a Tame Boar interception that also utilized night-fighter units based in northern France and the Low Countries. Mosquito diversionary attacks on Dusseldorf, Kiel and Hanover failed and the Germans worked out that Berlin was the target 30 minutes before the raid began, which also allowed Wild Boar units to get in place. Once through the target, the twin-engined night-fighters infiltrated the bomber-stream once again. Fuel starvation would curtail their pursuit, but the night-fighters still controlled by the old Himmelbett system then lay in wait on the Dutch coast. The outcome was that the Luftwaffe shot down 35 aircraft (4.6 per cent), but the really devastating statistics came in for the Halifax squadrons, especially the MkII/V operators who suffered 10 per cent losses. This would have been even worse if bad weather hadn't kept some night-fighters on the ground. The Luftwaffe had shown that the bomber-stream could be placed under constant siege for most of its mission, with different *Nachtjagdgeschwader* from many different airfields along the way joining the battle. It was an alarming development.

The following night saw a very expensive attack on Magdeburg with 57 aircraft (8.8 per cent) lost, including further decimation of the older Halifaxes. The spoof attack by 22 Lancasters and ten Mosquitos on Berlin failed (they reported seeing the Wild Boar fighters leaving the German capital in the direction of Magdeburg). The majority of the damage was

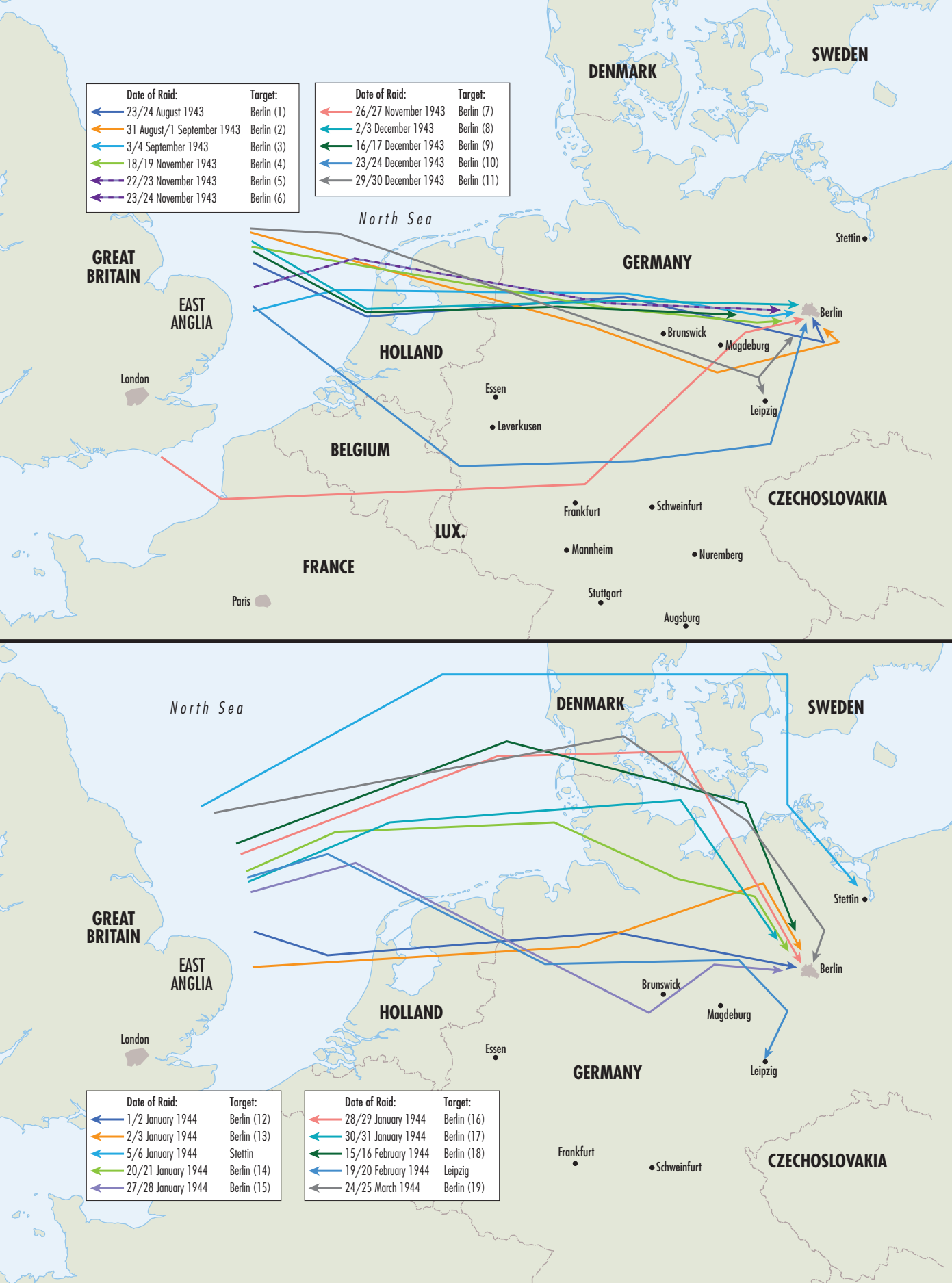
The debriefing of a bomber crew after the long trip to Stettin on 5/6 January 1944. (Photo by Harry Shepherd/Fox Photos/Hulton Archive/ Getty Images)

caused by Tame Boar tactics, however, and the very high casualty rate of 35 Halifaxes (15.6 per cent) suggested the end for this type on German operations. The attack was unsuccessful, with inaccurate marking and the Germans' decoy sites preventing many bombs falling on Magdeburg. Behind the scenes, this attack caused a considerable row between Harris and the Air Staff, the latter arguing it was a blatant violation of the new bombing directive of 14 January. It would lead to a further directive on 28 January that ordered Harris to focus on an alternative target – the towns and cities involved in German fighter production. Notwithstanding these new instructions, and perhaps sensing the changing mood within the Air Ministry and that the time for completing his Berlin campaign was running out, Harris ended January by hitting Berlin very hard with three raids in four nights.

A Lancaster's bombload for the 5/6 January 1944 operation to Stettin. This shows the flexibility of the aircraft's bomb bay: there is no 4,000lb bomb or incendiary packs, but instead 14 1,000lb HE bombs. (Photo by Flt Off S. A. Devon/IWM via Getty Images)

The first was on 27/28 January with 530 aircraft, of which 15 were Mosquitoes and, owing to increased production, 500 Lancasters. But it was the thorough planning undertaken by HQ Bomber Command, in response to the German tactics of Tame Boar, which was most notable about this attack. The first was the increased rate of 23 aircraft per minute to bomb the target area. The second feature was the new and considerable diversionary operations that were laid on, which comprised 140 aircraft. These support operations were designed to be more convincing and thereby fool the German defenders. A major sortie ('Gardening') of 80 Stirlings, Wellingtons and PFF Halifaxes was sent to lay mines around the German Bight and Heligoland. The Berlin-bound bomber-stream followed the diversion but then turned south-eastwards in order to enter the continent via northern Holland. This course was maintained directly into Germany, keeping the German controllers guessing at the target, which at this time seemed to be one of the major north-central German cites (Hanover, Brunswick, Magdeburg or Leipzig). But then suddenly the bomber-stream turned north-eastwards for the final dog leg route to Berlin. Meanwhile, Mosquitoes carried on the original course, dropping large amounts of *Window* to keep the Germans thinking the bomber-stream was continuing on that trajectory, while other Mosquitoes dropped fake route-markers and fighter flares north-east of the bomber route and also north-east of Berlin. The plan was complemented by the usual RCM sorties and *Serrate* patrols.

The plan showed how the Luftwaffe's tactics had made Bomber Command's planning for operations against Berlin much more complicated. As the Halifaxes were using H2S, the Germans did send some night-fighters out into the North Sea, believing this was the evening's main attack. Yet, despite the intricate planning for the outbound route to get the bombers over Berlin, the loss of 33 aircraft (6.4 per cent) showed that the British bombers could still suffer heavy losses to the single-engined night-fighters in the target area and to the twin-engined fighters on the homebound journey. Flak was less intense, suggesting that the Wild Boar method over Berlin was still in use. The return route, which went deeper into Germany before heading in a direction south of the Ruhr, ensured that all the *Nachtjagdgeschwader* could intercept the bomber-stream at some point, especially as the British aircraft were slowed down by a strong headwind. Elsewhere, the old problems with blind marking over Berlin remained. The wind caused the sky markers, initially accurate, to drift away and the bombing became spread out, but generally falling on the south-eastern and eastern zones of the city, particularly in the industrial areas around the River Spree.


Date of Raid: Target:
23/24 August 1943 Berlin (1)
31 August/1 September 1943 Berlin (2)
3/4 September 1943 Berlin (3)
18/19 November 1943 Berlin (4)
22/23 November 1943 Berlin (5)
23/24 November 1943 Berlin (6)
Date of Raid: Target:
26/27 November 1943 Berlin (7)
2/3 December 1943 Berlin (8)
16/17 December 1943 Berlin (9)
23/24 December 1943 Berlin (10)
29/30 December 1943 Berlin (11)
North Sea
DENMARK
SWEDEN
GREAT BRITAIN
EAST ANGLIA
GERMANY
HOLLAND
BELGIUM
LUX.
FRANCE
CZECHOSLOVAKIA
London
Paris
Stettin
Berlin
Brunswick
Magdeburg
Leipzig
Essen
Leverkusen
Frankfurt
Schweinfurt
Mannheim
Nuremberg
Stuttgart
Augsburg
North Sea
DENMARK
SWEDEN
GREAT BRITAIN
EAST ANGLIA
HOLLAND
GERMANY
CZECHOSLOVAKIA
London
Stettin
Berlin
Brunswick
Magdeburg
Essen
Leipzig
Frankfurt
Schweinfurt
Date of Raid: Target:
1/2 January 1944 Berlin (12)
2/3 January 1944 Berlin (13)
5/6 January 1944 Stettin
20/21 January 1944 Berlin (14)
27/28 January 1944 Berlin (15)
Date of Raid: Target:
28/29 January 1944 Berlin (16)
30/31 January 1944 Berlin (17)
15/16 February 1944 Berlin (18)
19/20 February 1944 Leipzig
24/25 March 1944 Berlin (19)

OPPOSITE THE BOMBER ROUTES TO BERLIN: SEPTEMBER 1943–MARCH 1944

The next night saw a similar plan of attack, for a maximum effort of 677 aircraft, which included the Halifaxes. The outbound and inbound routes were very similar, both going out and returning over Denmark and the German Baltic coast to take the bomber-stream away from the night-fighter squadrons in northern Germany and the increasingly dangerous route across Holland, although this did cost some bombload. British support operations were as complex as the previous night. Mosquitoes, once again showing their tremendous operational versatility, attacked German night-fighter bases in Holland for the first time, maintained *Serrate* patrols, conducted a spoof raid on Hanover, and undertook two early attacks that involved dropping masses of *Window* and fake fighter flares around Berlin to attract the Luftwaffe. Meanwhile, 67 Stirlings and Halifaxes undertook a mine-laying operation in Kiel Bay. Such a complicated operational plan had mixed success. Uncertainty over the weather forced a critical delay in the take-off of the main force and Hanover diversion, so the support operations had finished long before the bomber-stream had arrived over Denmark. The Germans tracked the British aircraft, but there was little night-fighter activity at this stage due to the distant routeing of the bomber-stream to the north. Again the problems started at the target area, which became thick with single-engine Wild Boar night-fighters over Berlin and twin-engined Tame Boar night-fighters waiting outside. A considerable number of air combats developed, with the Fw 200 Condor once again being seen to drop fighter flares to signal the bomber-stream's whereabouts. Losses mounted and 46 aircraft (6.8 per cent) were lost, with another five crashing into the North Sea probably due to fuel starvation. Yet this was also a night when Bomber Command's marking and bombing of Berlin finally went well. Rare cloud breaks over Berlin allowed a concentrated attack, with the PFF doing a fine job of continuing accurately to mark the target for the duration of the attack. Heavy damage was caused to industries and built-up areas in southern Berlin that left 180,000 homeless. There were numerous huge explosions – including a massive blue-flamed one that indicated a direct hit on a gasworks – and fires were gradually merging into one for 5 square miles, suggesting that a firestorm was taking hold of Berlin.

After such a successful attack, Harris immediately followed up with a raid comprising 534 aircraft; the older Halifaxes had been removed from the operational Battle Order, but 82 of the new Mk IIIs did take part. For the aircrews, these major efforts of three raids in four nights affected morale quite considerably. Fatigue and nerves jangled by the prospect of tangling with the Luftwaffe's night-fighters all served to lower the mood at many RAF bomber stations. Regardless, Harris pressed on – conscious that time was running short for a victory, and of the much less favourable mood towards the campaign within the Air Ministry.

For some reason, HQ Bomber Command devised an operational plan that was a sharp contrast to the complicated plans of the previous two operations. There would be no early raids on Berlin by Mosquitoes, nor attacks on German airfields in Holland. The only support operations were spoof attacks on Elberfeld and Brunswick, and the usual RCM and *Serrate* sorties, one of which downed a Bf 110. To drop a large bomb tonnage on Berlin with fewer aircraft than the night before, a direct route had to be followed, which crossed the North Sea to fly over Schleswig-Holstein into the Baltic before a turn south-eastwards for a straight run to Berlin. Worryingly, the return route simply involved a largely straight run across Germany to the dreaded area of northern Holland, with its ever-alert night-fighter defences and crews. The only defence for the bombers was the weather, with clear conditions over England but thick cloud over Germany that, it was hoped, would limit the Luftwaffe night-fighters' activity. The German controller, initially believing this was a mining operation

Most heavy bombers of Bomber Command carried seven aircrew: pilot, flight engineer, bomb aimer, navigator, wireless operator, mid-upper gunner, and rear gunner. The exception was the aircraft of 101 Squadron, based at Ludford Magna, which carried an eighth crewman who spoke German and operated a jamming system called *Airborne Cigar* (ABC). (Photo by Hulton-Deutsch Collection/Corbis via Getty Images)

because Berlin would not be attacked again with the moon rising, nonetheless as a precaution sent the Tame Boar aircraft to the beacons at Bremen and over the River Elbe. In doing so the night-fighters were too far south to intercept the bomber-stream, but this was rectified by ordering the fighters to move to the Berlin area. Soon, major combats developed on the bombers' route into, over and out of the target, and losses were again well over the acceptable 5 per cent casualty rate at 6.2 per cent (33 aircraft). This maintained the costly nature of Berlin operations throughout this month. But the bombing was concentrated, with major damage to the area around the city centre and its transportation system and public buildings (including Goebbels' Ministry of Propaganda). A Mosquito that later flew over Berlin noted the glow of major fires, with smoke rising to 18,000ft.

After a long run of partial successes, the late January attacks had proved to be the most effective since the Battle of Berlin resumed back in November. Combined, these three raids probably did significant industrial damage to Siemens, Telefunken, Zeiss Ikon, Rheinmetall-Borsig and Daimler-Benz, but HQ Bomber Command did not have any real idea of the extent of the damage until aerial photographs were taken some two weeks later – which showed that Harris was often fighting this battle with little information on progress and the prospects of success. Press reports picked up from Sweden – and presented by *The Times* – suggested Berlin had been hit hard, and encouraged intelligence staff at High Wycombe to proclaim 'the morale of Berliners has sunk even further into the "Slough of Despond"'. But this was hardly convincing. The aircrews of Bomber Command were simply left to press on until the final collapse happened – or the campaign was called off altogether.

In fact, the latter outcome seemed ever more likely, given that from 14/15 January to 30/31 January Bomber Command had suffered a total loss of 243 heavy bombers. Both operations to Berlin, and against other long-distance targets, were becoming increasingly expensive, with the average loss rate being 6.7 per cent – well above the acceptable 5 per cent. The reason for this was twofold. First, the pattern of attacks – either to Berlin or other cities in northern Germany – had made Bomber Command all too predictable, while generally speaking the routeing was unimaginative and far too keen on flying over Holland, which was fast becoming a graveyard for RAF heavy bombers. This is connected to the second reason, namely that the Luftwaffe's night-fighters were at their zenith, in large part due to their new

ability to first home on H2S emissions using the *Naxos* device, which could not be jammed, and then to find the British aircraft using the SN-2 radar. Meanwhile, with the British bomber-stream having become even more concentrated in order to shorten the time over the target, the running commentary of ground controllers, now being broadcast over multiple channels, could inject a good number of German aircraft into a target-rich environment. From Frankfurt, there seemed to be a trend towards detecting the bomber-stream early, and in some instances, to engage it prematurely over the North Sea. Diversions no longer worked, as the bombers were intercepted earlier. Routeing had to be direct, or circuitous. Quite simply, the continuation of the Battle of Berlin had sharpened the German air defences and they were no longer as easily fooled as they had been in autumn 1943.

In addition, the new technical devices then allowed a modification of tactics. Schmid now ordered the pursuit of bomber-streams on a large scale. Himmelbett would continue to operate over the Netherlands and Wild Boar night-fighters would still be deployed to the target, but the major tactical change of the Germans was to get as many Tame Boar night-fighters into the bomber-stream as early as possible. This meant the British would be under siege during most stages of the operation, adding to the stress and fatigue of the bomber crews. For example, the Berlin operation of 30/31 January saw few attacks on the bombers' outbound journey, as the German defenders worked out precisely where it was going, but the return journey was a nightmare that saw 33 aircraft lost. To facilitate this, the improved SN-3 radar was developed, together with a better device for detecting the bombers' exhausts, and the lethal Schräge-Musik cannons.

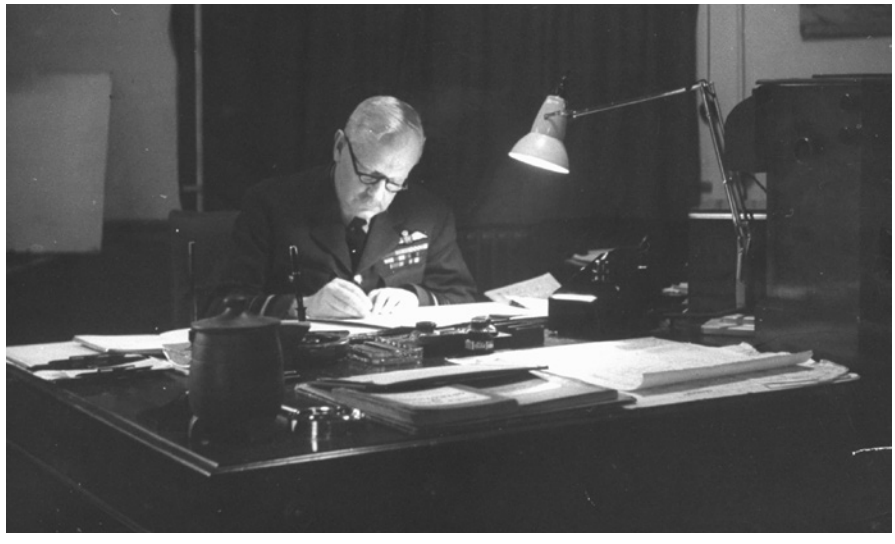
For all this, though, night-flying in winter remained dangerous and, though rested by the pause in Bomber Command's operations from early to mid-December, January 1944 saw little rest for the night-fighter crews, and the rate of simple landing crashes remained high. Losses of aircraft and pilots remained considerable, and replacements for the latter were inexperienced and patchily trained. Battle strain and fatigue became problems, and Luftwaffe pilots only enjoyed occasional periods of leave. This accounted for the loss of such aces as Major Heinrich Prinz zu Sayn-Wittgenstein, who, with 83 victories, was shot down on 21/22 January.

The 'other battle': HQ Bomber Command against the Air Ministry

Whilst Harris was conducting major attacks on German cities throughout January 1944, he was becoming embroiled in an ever more intense dispute with the Air Staff over British bombing policy. This led to Bufton on 22 January writing that Bomber Command 'is operating to a policy of its own', and that such division between the Air Ministry and Bomber Command over target selection 'cannot be permitted to continue during the critical months ahead, when it is essential that the closest co-operation should be maintained'. It may be stated that 'closest co-operation' was a euphemism for following the Air Ministry's wishes.

The seeds of this dispute had been sown during summer and autumn 1943, but had loomed larger as the Battle of Berlin had continued. The crux was how the Air Ministry was interpreting intelligence on two subjects: the rate of German fighter aircraft production and the effects of area bombing. For the former, throughout autumn the Air Ministry figures indicated an increase in single-engined fighter production from 740 (on 1 July) to 800 (1 October) and twin-engined aircraft from 470 to 725 at the same time, and the Assistant Chief of the Air Staff (Intelligence) informed Portal on 3 November that these figures would be set to increase to 880 and 830 by 1 April 1944. Luftwaffe fighter strength appeared to be due to production, not transfers back from the Fronts.

With VIII (US) Bomber Command also suffering heavy losses in several daytime operations from August to October, the growing German fighter strength alarmed the Air Ministry. It had to be dealt with as a prelude to *Overlord*. Further intelligence stated that Hitler and the



Harris working in his office at Bomber Command Headquarters. He wrote many letters, often to Portal and others, which protested at the 'diversions' away from the true goal of the bomber offensive, namely the area bombing of Germany's cities. (Photo by Frank Scherschel/The LIFE Picture Collection/Getty Images)

German High Command particularly 'feared the daylight precision attacks on individual factories' in contrast to the German people who 'feared the night attacks'. This seemed, in the view of the Air Ministry, to argue for area bombing of precise targets, such as Schweinfurt, rather than continuing the Battle of Berlin. Fighter production had to be checked, and as the Americans could not do so, Bomber Command had to undertake this. One briefing paper for a meeting on 19 January highlighted the targets:

Single-engined fighters:
Leipzig – Assembly, Major Components, Bf 109;
Regensburg – Assembly and components, Bf 109 …
Arado, Totow, Feisler, Kassel, Ago, Oschersleben, Fw 190.
Twin-engined fighters:
Gotha – Assembly and components, Bf 110;
Augsburg – Assembly and components, Me 410;
Brunswick – Assembly and components, Bf 110;
Bernberg [*sic*] – Assembly, Ju 88 …
[Therefore the] Associated towns for Bomber Command area attack: Leipzig, Brunswick, Gotha, Bernburg, Augsburg

At the same time, decrypted cables from Hiroshi Ōshima, the Japanese ambassador in Berlin, showed that area bombing, whilst destructive, was not achieving what it was designed to do: public utilities were quickly fixed and Berliners' resolve was not failing. 'Internal collapse', Ōshima wrote in January, 'will certainly not be brought about by means of air raids; the vicissitudes of the war situation as a whole will constitute spiritually, as well as otherwise, the most important factor'. Morale in Berlin was low, but strict government control meant people subscribed 'to the pitch of seeing no course but to fight to the finish'.

Indeed, on Churchill's specific request, in late January Harris read a report by the head of the Secret Intelligence Service. It briefed that while the Nazi leadership were concerned by civilian morale, apathy, and occasional strikes and riots, the morale of the Gestapo and SS remained unaffected, which meant 'it is difficult to see how an even more serious decline in German civilian morale can bring about a rapid collapse as [it did] in 1918'. Harris wrote similar sentiments after the war, suggesting this message was absorbed.

Behind all this lay preparations for Operation *Overlord*. On 23 December 1943, Portal informed Harris that 'as you probably know, we are not committed for good or ill to OVERLORD, and it therefore becomes necessary to consider plans for the employment of

the heavy bomber forces in connection with the Operation'. As early as 14 October General Henry 'Hap' Arnold, Commanding General of the US Army Air Forces, told Portal, as the coordinator of the CBO, that the British 'were not attacking the G.A.F. enough'. The Americans wanted a specific focus on a few critical industries, such as aircraft production, ball bearings and rubber, rather than Germany's wider industrial system. In early January 1944, after Harris enquired if the current bombing directive still held true, Portal replied that it did so, until the commencement of *Overlord*.

> The fact that support of *Overlord* will then become your primary object will not mean that operations against Germany on the present lines will cease. On the contrary, it is most desirable that these operations should continue on as large a scale as possible, for reasons indicated in your letter. But the criterion by which they are judged will then be the extent to which they assist *Overlord*, not (as at present) the extent to which they weaken Germany's general power to make war.

Harris did not buy this. The British official history interprets this as showing clearly Harris' belief that *Overlord* was a commitment that 'ought to be discharged with the minimum interference in the development of the Bomber Command area offensive'. All this fed into British targeting strategy for the new year, at the centre of which was the row over Schweinfurt and its ball bearing plants, which were considered the choke point in German fighter aircraft production.

This target had been attacked, at great cost, by the Americans in August and October 1943, and the losses had made it unlikely that US public opinion would stomach another attack. The mantle passed to Bomber Command, and throughout December 1943 Harris came under increasing pressure to make an attack. But Schweinfurt was, in Harris' mind, a 'panacea target' and an unnecessary distraction from bombing Berlin and Germany's other centres of war production. He explained forcibly in a letter of 20 December that attacks on panaceas had seen wasted raids on such places as the Moehne Dam, the molybdenum mine at Knaben, and the Modane marshalling yard. But the Air Staff, which believed the best way to cripple Germany was to target specific industries, replied on 23 December with a letter that had the backing of Sinclair and Portal, and the row rumbled on. It took place as both the senior British and American airmen were meeting to decide how best to focus their efforts in support of *Overlord*, particularly *Argument*. On 3 January Portal therefore asked Harris, in a polite reminder, to 'adhere to the spirit' of the Pointblank Directive, but Harris bombed Stettin two days later. On 13 January Harris even doubted *Overlord* itself and maintained that Bomber Command's true role was the strategic city-bombing offensive.

General Eisenhower in his new London headquarters in January 1944 in front of a large wall map of France – soon to be the priority of Bomber Command's operations after 1 April 1944. (Photo by Keystone/Hulton Archive/Getty Images)

Bufton at the Air Ministry on 12 January cast further doubt on Harris' bombing policy by stating that: 'a continuation of purely area bombing policy at night is unlikely to achieve the ultimate aim as quickly as that which we advocate. Indeed, it may result in the Americans by themselves, being unable to bring about the conditions needed for the launching of *Overlord* in the short time now available'. Therefore, Bottomley

prepared another letter in mid-January 1944 that specifically told Harris 'to attack Schweinfurt in force on the first opportunity and to continue to attack it until it should be destroyed'. Portal, knowing this would lead to further trouble with Harris, referred this to Sinclair, who issued instructions for it to be 'redrafted as a direct and unqualified order'. It was from this that a new bombing directive was sent to HQ Bomber Command on 14 January. Harris, even then, continued to object and sent a letter five days later that set out the tactical difficulties of undertaking an attack on Schweinfurt. Moreover, he ignored the new directive by attacking Magdeburg on 21/22 January rather than a high-priority target like Leipzig or Brunswick, thus precipitating a serious disagreement with the Air Staff. The Air Staff conducted an investigation into the weather forecast and found little to choose between the three cities (all in the same area of Germany) and therefore concluded that there had been no reason for Harris to have bombed Magdeburg, except to complete his programme of city bombing. And on 26 January Bufton made a negative assessment of the success of Bomber Command area attacks, in which he questioned some of the basic assertions of Harris' 7 December 1943 memorandum and offered a scathing critique of the effectiveness of area bombing:

> The fact remains, however, that we have as yet no criterion by which to judge when the critical breaking point [in morale] will be reached. It may be reached when the remaining 32,500 tons of bombs have been dropped. But we do not know that 100,000 tons will not be required. It is in the light of this uncertainty that we have questioned the wisdom of continuing with a purely area attack policy at this time.

'Area attack', the Director of Bomber Operations asserted, 'produces a small effect upon a large number of industries rather than a large effect on a few'. Bomber Command should instead continue to help the stalled offensive of the Americans by night attacks on aircraft targets. Any failure of Harris' to obey would lead to 'a chance that the Americans, left to fend for themselves, may be "frozen out" of Germany'. Therefore, the position had become clear: full Anglo-American co-operation, a truly combined bomber offensive, required Harris partially to give up his city offensive. On 19 January, Portal presided over a top meeting at the Air Ministry about better co-ordination between Bomber Command and VIII (US) Bomber Command, which meant the former had to pay attention 'to small towns connected with the G.A.F. and the ball bearing industry, than to large towns which were easier to attack', and a signal embodying this conclusion was sent to the Combined Chiefs of Staff in Washington.

Chief of Air Staff (CAS) Marshal of the Royal Air Force Sir Charles Portal, who became increasingly sceptical – and concerned – about Harris' campaign against Berlin. (Photo by Hans Wild/The LIFE Picture Collection/Getty Images)

Magdeburg therefore forced the Air Staff finally to choose sides, and they decided to support the Americans, not their own C-in-C Bomber Command. In the days following the operation, minutes by Portal and Sinclair would show the clear turn against Harris. The Chief of the Air Staff (CAS) even wrote that 'any attempt to calculate the date by which Germany will collapse under a given weight of attack is little more than a waste of time'. The objections of Bufton to the Magdeburg

attack and, by implication, to Harris' entire modus operandi of Pointblank clearly showed that he and others within the Air Ministry were now demanding that the 'intermediate objective' of destroying the Luftwaffe was to be the immediate priority, well above the city campaign, and this explains why Bufton had clearly felt that Bomber Command should have attacked a priority target on 21 January, particularly Leipzig. Moreover, Magdeburg had made a mockery of the Chief of Staff's (COS) signal to Washington that 'now that the larger industrial areas have been so severely damaged and OVERLORD is imminent, the concentration of Bomber Command's efforts on the remaining most vital targets so far as is practicable is justified, and has been ordered'. Consequently, on 28 January, a further instruction confirmed that Schweinfurt was first priority, behind which lay an order of priority for the attack on five other cities – Leipzig, Brunswick, Regensburg, Augsburg and Gotha. This directive was notable for having dispensed with the usual preamble on 'the general dislocation of German industry' – a phrase that had long represented the C-in-C's get-out clause to continuing with city bombing – and to state formally that the hitherto primary target of the German industrial system was now, in fact, no longer primary. Harris was no longer subject to the mere wishes of the Air Ministry, but was instead given a direct order to attack the cites of German aircraft production as soon as possible.

This focus on Luftwaffe targets marked a significant step towards altering the entire role of the British strategic bomber force, but this was only the first step in a wider plan of operations that was linked to *Overlord*. The second phase was the attack of targets linked closely with preparations for the invasion itself, such as railway centres, coastal defence installations, harbours, and airfields. Such developments caused Harris to simply go for broke on Berlin in late January. Once he had committed his force to Operation *Argument* it would be difficult to switch it back to resuming the campaign against the German capital. In an unrepentant letter to Robert A. Lovett, the US Assistant Secretary of War for Air, Harris bluntly stated his aim remained 'to finish with Berlin' and to 'dispose' of 'as many of the major industrial centres in central Germany as we can'.

Ebbing away: bombing policy shift in February 1944

For the first two weeks of February the squadrons of Bomber Command were stood down. A full moon period usually postponed operations for about a week, but this was an extended pause. After the tough month of January, Bomber Command were exhausted and needed time to recuperate. At the same time, Harris now found it harder to continue the Battle of Berlin. He was now under direct orders to switch the major focus of Britain's strategic bombing campaign, and these instructions, given in January, were reinforced by a directive on 17 February to support the Americans in Operation *Argument*. This had to be done sooner rather than later to erode the Luftwaffe before *Overlord* and to free up the American heavy bombers for targets in France. This, together with the weather, would cause the Battle of Berlin effectively to fizzle out. Harris tried to launch one last major effort against Berlin, but a total of four operations (13/14 February, 16/17 February, 17/18 February and 18/19 February) were subject to late afternoon cancellations because of the weather. This would have represented Harris' final blitz on the German capital, but it was not to be.

In the event, he launched one solitary raid on 15/16 February, though this was a colossal effort of 891 aircraft, the largest attack of all, which would drop a monumental bombload of 2,643 tonnes. In order to saturate Berlin's defences and to be quickly away from the heavily defended target area, the bomber-stream was very concentrated. The attack would be complete in 20 minutes, with about 45 aircraft bombing every minute. This night's bomber force was the kind that Harris had needed (and wanted) from the beginning: 500 Lancasters and 300 Halifaxes, including greater numbers of the Mk III. Before take-off, Harris gave a message of congratulations to his aircrews on their progress in the Battle of Berlin and

Fighter Corps HQs
Fighter Division HQs
Nightfighter beacons
North Sea
Rostock
Westerland
Quelle
Richard
Stade
2nd Fighter Division
(Generalmajor Max Ibel)
HQ Stade, Hamburg
Parchim
Ludwiglust
Oldenburg
Neurrupin
1st Fighter Division
(Oberst Hajo Herrmann)
HQ Döberitz, Berlin
Vechta
Maria
Celle
Stendal
Quackenbrück
2nd Fighter Division
Berta
Berlin
3rd Fighter Division
(Generalmajor Walter Grabmann)
HQ Deelen
Rheine
Osnabruck
Ludwig
Siegfried
Twenthe
I FIGHTER CORPS
(Generalleutnant Josef Schmidt)
HQ Zeist
Münster/
Handorf
Zerbst
Jüterbog
Gustav
Xantippe
Nordpol
Kurfürst
HOLLAND
GERMANY
Venlo
Bazi
Essen
Caesar
1st Fighter Division
Brandis
BELGIUM
Brussels
Saint-Trond
Cologne
Bad Langensalza
Erfurt
Ida
Bonn
3rd Fighter Division
Athies
Florennes
Otto
Langendiebach
Wiesbaden/Erbenheim
Frankfurt
Dora
4th Fighter Division
Mainz/Finthen
Anton
Heinz
Wilhelm
II FIGHTER CORPS
(Generlleutnant Werner Junck)
HQ Chantilly
Laon
LUX.
Mannheim
7th Fighter Division
Nuremberg
FRANCE
Ulrich
4th Fighter Division
(Oberst Karl Wiek)
HQ Metz
Paris
Coulommiers
Neuberg an der Donau
Saint-Dizier
Stuttgart/Echterdingen
7th Fighter Division
(Generalleutnant Joachim Huth)
HQ Schleissheim, Munich
Paula
N
0
75 miles
0
75km

OPPOSITE THE AIR DEFENCE OF THE REICH AND LUFTWAFFE ORDER OF BATTLE, MARCH 1944

charged them to 'administer the *coup de grâce* to the Big City'. Given the January losses on operations to Berlin, HQ Bomber Command produced a highly complex operational plan to mislead the Luftwaffe defenders. The support operations were very extensive: 14 Mosquitoes were to conduct *Serrate* patrols, 23 Mosquitoes (using *Oboe*) were to attack night-fighter airfields in Holland, two Mosquitoes were to bomb Aachen, 47 Stirlings and Halifaxes would lay mines in Kiel Bay, and there were nine RCM sorties. So too were the diversionary operations nearer the target area, which involved an early Mosquito raid on Berlin and spoof target marking by 24 PFF Lancasters on Frankfurt-on-Oder that was designed to look like the main raid and thereby pull the night-fighters further eastwards. Of course, the night-fighters that would be pulled this way would be the Wild Boars that operated in the target area.

Herein lay the reason why the operational plan did not fool the Germans, who extracted a loss rate from Bomber Command of 42 aircraft (4.8 per cent). The bomber-stream was detected early, over the North Sea, while the mine-laying operation was ignored. As the route went over northern Denmark, the Luftwaffe's Tame Boar pilots held back, relying on the running commentary following the route before flying in the direction of Berlin. There they infiltrated the British aircraft as they were nearing the target, and a good number of bombers started to fall, which completely voided the diversionary effort on Frankfurt-on-Oder.

Over Berlin, the flak was extremely heavy – claiming three bombers – before the Tame Boar night-fighters, waiting in the skies outside the German capital, then infiltrated the bomber-stream again. Although many would have to land because of low fuel, night-fighters based in Holland were then sent up to challenge the British bombers as they crossed the Zuiderzee and Dutch coast, and this resulted in another 13 aircraft lost. It had been a trying night. Once again, Berlin was covered in thick cloud. Sky markers were dropped consistently, but the attack was scattered between the city centre, the western and southern districts, and the surrounding countryside. However, some of the 2,600 tons of bombs dropped did cause extensive damage to Berlin's industries, including the Siemens and Daimler-Benz factories, as revealed some days later by only the second batch of aerial photographs taken of Berlin during the entire campaign.

This attack marked the end of the Battle of Berlin. Just three days later, Harris had switched focus to helping the Americans with Operation *Argument*. Tellingly, on the eve of its commencement, Harris informed Churchill that:

> The comparative tonnages on German targets is illuminating. U.S. VIII Bomber Command dropped 24,475 tons on the whole of Germany in the whole of 1943. We have dropped 24,662 tons on Berlin alone between 18.11.43 and 30.01.44.

The devil was in the detail, however. It was only as late as 19 February that up-to-date aerial photography became available on the damage caused by the previous nine Berlin attacks. Investigation now took place as to what had been achieved. Soon, doubts were being expressed. One report stated:

> Although no large increase of devastated area has been caused by the attacks carried out since 16/17th December, this can well be accounted for by the fact that almost all the attacks were made through cloud and fall chiefly on the less densely built-up areas, and, of course, the law of diminishing returns is applicable to any heavily bombed target. It is also far more difficult to obtain large scale incendiary damage in the less built-up areas, due to the natural fire gaps and, frequently, the more modern construction of the buildings. Factories are, however,

> chiefly situated in these areas, and the large amount of evidence regarding the damage inflicted (obtained from reliable ground sources) which cannot be accounted for by photography may well be due to the fact that photographic confirmation of H.E. damage on a widespread scale is on the whole more difficult to obtain than evidence of incendiary damage.

The Ministry of Economic Warfare (MEW), acting on information gained up to 28 February, made a formal assessment of the destruction caused that stated 'the whole series of attacks since mid-November, which have come to be known as The Battle of Berlin, have destroyed nearly one quarter of the German capital' and reduced its industrial output by some 30 per cent, with significant damage to Class 1 priority targets of the Daimler-Benz Works, Lorenz and the A.E.G. factories. Damage to government buildings and housing was extensive, with German sources stating that 1.5 million people had been rendered homeless. Transportation, either through or around Berlin, had been seriously disrupted, particularly due to the damage of railway stations and marshalling yards, and the destruction of rolling stock. Yet as devastating as it had been (and Harris himself would cite such figures in his post-war accounts), the fact remained that the air campaign had not achieved its overriding aim: Germany's final defeat. Meanwhile, Operation *Argument* commenced and saw Bomber Command undertake operations against Leipzig (19/20 February), Stuttgart (20/21 February), Schweinfurt (24/25 February) and Augsburg (25/26 February). It was at this time that the Combined Bomber Offensive had indeed become more combined. The badgering and debate over Harris' participation in Operation *Argument* was over – but so too was Harris' Battle of Berlin.

The final time

March 1944 saw the shift of Bomber Command's strategy towards greater co-operation with the Americans continue. Attacks on Stuttgart (twice) and Frankfurt (twice) were undertaken, together with targets in France as part of the commencement of a pre-*Overlord* bombing programme. The irony, of course, was that the US Eighth Air Force had finally commenced its own Battle of Berlin. Meanwhile, the final week of March brought the hammer down on Harris' winter offensive in the form of a report that questioned its entire effectiveness, and two disastrous raids, one on Berlin (24/25 March) and the other on Nuremberg (30/31 March). On 23 March, the Ministry of Home Security's RE8 Department released

A B-17 Flying Fortress of the US Eighth Air Force over central Berlin. By early 1944, Spaatz had pushed the US Eighth Air Force into conducting long-distance operations over Germany, which included the raids of 'Big Week' and, from early March 1944, operations against the German capital. The Americans had finally joined Harris in the Battle of Berlin, but it was at the end, not the beginning. (Photo by Uhrig/ullstein bild via Getty Images)

a report called 'Preliminary Attack Assessment, Berlin', which concluded that only 5 per cent of residential buildings and 5 per cent of industrial plants had been damaged – rather contradicting the MEW's earlier assessment. Like undertaking the bombing itself, making an accurate assessment of its effectiveness was proving extremely difficult.

However, on 24/25 March Harris tried Berlin one last time. It remained open to question as to why he launched this operation, but with Harris and Brigadier General Carl Spaatz, commanding-general of US Strategic Air Forces in Europe, now regularly sending the US Eighth Air Force to attack Berlin (as part of their plan of wasting the Luftwaffe through a strategy of attrition), Harris was not to be outdone. By this time, the Americans had undertaken five raids in three weeks against Berlin's aircraft factories in its own Battle of Berlin. Given this, Harris felt that RAF Bomber Command could scarcely sit on the sidelines whilst the US Eighth frequently attacked the German capital, especially given his request for American support in his 3 November memorandum to Churchill. The 24/25 March also seemed a window of opportunity to administer a terrible blow on Berlin: the Americans were planning a daytime operation to Schweinfurt, and this might pull German fighters down to southern Germany. Moreover, it was hoped to keep the NJG units down there by sending a support operation, comprising HCU and OTU crews, over to France so the German controllers would think this was the main attack heading for a target in southern Germany. Such tactical considerations were important given that Harris was sending his force back into the heavily defended area of north-central Germany, which he had avoided since the terrible Leipzig operation of 19/20 February. Harris had tried to launch a mission on 21/22 March, with the Americans bombing Berlin during the daytime, but he had cancelled in the late afternoon owing to the weather. This was curious, for throughout the campaign Bomber Command had frequently bombed the capital blind. Operations to this target had been cancelled because of conditions at the British bases or en route, but never because of cloud cover over Berlin. Yet on this occasion, the last effort, Harris wanted *clear weather* (author's emphasis) over the target.

Three nights later, he got these clear conditions and ordered a maximum effort of 811 aircraft carrying a bombload of 2,493 tons. It would prove to be an operational disaster. This was because of the weather, not over Berlin but en route. Indeed, the uncertainty over the forecast had meant that Brunswick was on standby to be the alternative target, but finally the decision to bomb Berlin was confirmed. HQ Bomber Command took this decision based on out-of-date information from a morning weather flight and had received no further information on atmospheric conditions, which in northern Europe can change quickly. But Harris had gambled before, both earlier in the Battle of Berlin and on other operations, and this had paid off. Tonight was no different – except that he would come unstuck. A very high northern wind, up to 100mph, hindered navigation and positions, and scattered the bomber-stream southwards into Germany. Briefings had not given this strong wind forecast and for many crews it proved difficult to detect once in flight; navigators using *Gee* did detect it, but this device was soon jammed. Many aircraft were pushed much further to the south, and most navigators soon had little idea as to their aircraft's precise location. This completely invalidated the finely tuned plan of attack, in which the approach route was supposed to be through the 'safer' area of Denmark and the Baltic. Worse still, the bomber-stream was fractured into loose groups and spread over many miles. A very concentrated time over the target was thus now impossible to achieve; aircraft did not arrive in their allocated waves and early Main Force crews had to waste time by circling Berlin while waiting for the Pathfinder aircraft to mark the target.

Not surprisingly, the wind also completely threw out the planned method of marking. This was supposed to have been a visual marking attack (*Newhaven*), in which the aiming point of the Tiergarten – chosen so the attack would fall on undamaged parts of the city centre – was to be illuminated by flares to allow it to be visually identified and then marked by ground-based TIs. Unexpected cloud over Berlin made any visual identification of the

aiming point impossible. So a not-very-concentrated marking effort using the Berlin Method was hastily improvised. Yet the wind had scattered both the Pathfinders themselves and also blew away the sky markers that had been dropped by those aircraft that had reached Berlin. Consequently, once the Main Force aircraft arrived, they bombed anything they could see. No concentrated bombing effort developed, and the bombing became scattered through Berlin's south-western districts and on surrounding towns and countryside.

Some 72 bombers (8.9 per cent) were lost due to night-fighters picking off aircraft that had been blown miles off track (and away from the protection of the bomber-stream and its masses of *Window*). Fewer aircraft were shot down over Berlin, showing that it was the Tame Boar night-fighters, which had followed the bomber-stream before waiting for it on the other side of Berlin, that had become lethal owing to the SN-2 radar and the devastating, and still unsuspected by the British, Schräge Musik cannons. The return journey, in which British bombers were spread out 50 miles wide and 150 miles long, was especially costly, with 47 aircraft lost. The wind blew the bombers on to such diverse flak hot spots as Münster, Magdeburg and the Ruhr. For others, the homebound route took the bombers over northern Holland, where they then ran into the night-fighters of NJG-1. The dismaying thing, which in many ways shows that Bomber Command had become tactically out-thought by the Luftwaffe, was that the bomber-stream had been under attack for most of the time it had been over Continental Europe. Though the British had been able to defeat Wild Boar with diversions and support operations, the harsh fact was that the long-distance operations since January 1944 – Berlin, Brunswick and Leipzig – had shown the British had little tactical answer to Tame Boar interception. Harris himself partially recognized this in a letter to the Under-Secretary of State for Air, Sir Arthur Street, on 7 April 1944. The C-in-C Bomber Command wrote that:

> The strength of the German defences would in time reach a point at which night-bombing attacks by existing methods and types of heavy bomber would involve percentage casualty rates which could not in the long run be sustained.

This point had 'not yet' been reached but the 'tactical innovations which have so far postponed it are now practically exhausted'.

The bitter campaign against Berlin was over. The city had certainly been damaged, but Germany was nowhere near surrender. Meanwhile, over the course of 19 attacks Bomber Command had lost 626 heavy bombers. The official history concludes that 'by a coincidence, which was, perhaps, as fortunate as it was fortuitous, the focus, though not the whole of the Bomber Command offensive, was shifted after the Nuremberg operation from Germany to France'. In his post-war account, Harris stated the Battle of Berlin began on 18/19 November 1943 and 'lasted until the middle of March 1944'. These dates should be questioned: the air offensive against the German capital started in late August 1943 but had been halted by Harris in mid-September. Similarly, the claim that the battle lasted to 24/25 March, when the last operation to Berlin was undertaken, can be equally contested. If an air battle can be discerned by an overwhelming focus on a particular target, then it was over after the cluster of Berlin operations in late January 1944. The February raid is interesting, for it came immediately before an official change in bombing policy that ordered Harris' compliance with Operation *Argument*, but it was the only raid in an intended series of attacks on Berlin that was mostly cancelled owing to the weather. The Luftwaffe may have defeated Bomber Command, but it was the weather that had proved a consistent problem. Six days after the last Berlin attack came the winter campaign's dreadful epilogue: the operation against Nuremberg, with its loss of 95 aircraft (12.1 per cent). Targets in southern Germany had now become as costly as attacks on Berlin and Leipzig. Far from securing a strategic victory in the Battle of Berlin, RAF Bomber Command had suffered a tactical defeat.

AFTERMATH AND ANALYSIS

A Halifax shot down during the Berlin operation of 24/25 August 1943. The Battle of Berlin would see the German countryside littered with the wrecks of downed British heavy bombers. (© Imperial War Museum, HU 25822)

The Battle of Berlin was over. Harris no longer had the operational latitude to direct operations against Berlin after January 1944. The C-in-C Bomber Command, it must be remembered, was ultimately an executor of British bombing policy, not a maker. This had thrown up few problems in 1943, when his campaign of area bombing fully complied with the general aim of the Casablanca Directive. He could legitimately keep hammering away at the Ruhr for four months with little criticism from the Air Staff and, similarly, he could target Hamburg, whose destruction was also enshrined in the bombing instruction of mid-January 1943. But the Battle of Berlin was conducted in different circumstances and increasingly with an Air Staff dictating to Harris what he should now be targeting – and this in no way included a sustained offensive against the German capital. The pressure to attack Luftwaffe targets became impossible to ignore by February 1944, and Harris had to comply with supporting the Americans during Operation *Argument*.

Thereafter, despite the scheduled switch to the Supreme Headquarters Allied Expeditionary Force (SHAEF) control by 1 April, the month of March did witness one final attack on Berlin. Yet as part of the experimentation for its new role under General Eisenhower's control, more precision-based attacks were made on transportation targets in France, which included the marshalling yards at Trappes, Le Mans, Amiens, Laon, Aulnoye, Courtrai and Vaires in what was the beginning of 'the *Overlord* air diversion'. Such attacks continued throughout, but so too did the area bombing of German cities under the 'Pre-*Overlord* Plan on Germany itself'. Between 31 March and 6 June, Harris undertook 18 major attacks on such targets as Frankfurt, Stuttgart, Essen, Nuremberg, Dusseldorf, Karlsruhe, Munich, Friedrichshafen, and Aachen … but not Berlin. *That* battle remained over.

Berlin, however, if not raided by the frontline strength of Bomber Command during the rest of the war, continued to remain a recommended target. In an ironic twist, the very Air Staff who had come to dislike the Battle of Berlin would later recommend this target under three plans that involved massive operations against the German capital. The

Damaged Lancaster bomber with flak holes going right through the fuselage. The aircraft suffered heavy damage to its bomb bay, rear turret and starboard wing, but the Canadian pilot, on three engines and with damaged controls, still brought the plane back from the Berlin raid of 24/25 March 1944. A real testimony to the aircrew's skill and the bomber's durability. (Bettmann/Getty)

first was called Plan *Lefthand* and involved a one-off attack on Berlin in daylight by the maximum strength of both Anglo-American strategic air forces. At the last minute the joint attack on 21 June was cancelled and the Americans carried out the attack alone in a huge 1,000-bomber raid. The second proposal was formulated by Bennett and called 'the 10,000 Plan' that involved two maximum efforts on Berlin by Bomber Command in one night. Such an attack, involving a colossal delivery of bombs, had been undertaken in mid-October 1944, but this was against the comparatively short-distance target of Duisburg in the Ruhr (as part of Operation *Hurricane*). Berlin's flight-time made this a different proposition, and Bennett's plan was considered too demanding from a re-fuelling, re-arming and aircrew point of view. Instead the idea of a split attack by Halifaxes and Lancasters, following short and long routes respectively, and then being backed up by an American attack in daylight, was put forward. It was felt that this type of attack carried a greater 'morale effect' than Bennett's original proposal, but it was all dependent on suitable weather for the US Eighth Air Force. As Harris commented in a handwritten note, 'we can never rely on the Americans being available next day' – a statement that showed that there was a real limit to Anglo-American operational co-operation during the European bombing war.

A third plan enshrined a proposal from the British Chiefs of Staff for the resumption of the Battle of Berlin, only this time it was to be much more violent and with the explicit goal of shattering German morale. Doing so, it was considered, 'might be decisive'. The Air Staff embraced this idea, possible as a retaliatory measure following commencement of German V-1 flying-bomb attacks on London, and Portal submitted a memorandum on 1 August 1944 titled 'Air Attack on German Civilian Morale'. The rate of attack was to be at least 20,000 tons of bombs dropped over four days and three nights – a true Hamburg-style concentration – and such intensity was advocated precisely to bring about a 'sufficiently catastrophic effect to suspend all ordinary life in Berlin'. The plan was approved by the British Chiefs of Staff on 5 August 1944 and submitted to Eisenhower for final preparations. This was, of course, the genesis behind the infamous Operation *Thunderclap*, though when the blow finally fell in February 1945 it would be against Dresden and Chemnitz, not Berlin.

All this shows that Harris was not the only senior British airman who continued to believe in the supposed usefulness of area bombing against civilians and towards the end of the war others – Portal, Bottomley, Bufton – were responsible for some extremely violent plans for operations against Germany's increasingly beleaguered cities.

Ironically, it was Berlin, or more precisely the city of Potsdam that directly bordered the giant metropolis, which brought Churchill's final condemnation of area bombing. The ever-mercurial prime minister had turned openly against it during spring 1945, as expressed in an infamous memo (to General Hastings Ismay) on 28 March that so inflamed opinion in the Air Ministry and led to the re-writing of Churchill's views in a less controversial form. Nonetheless, on 19 April in his new 'anti-bombing mood', Churchill bitingly asked Sinclair, 'what was the point of going and blowing down Potsdam?' Portal replied to the prime minister, but Harris' comments on this have gone unrecorded.

Berlin operation:	British aircraft losses:	Total losses for raid:	% lost of a/c dispatched:
23/24 August 1943 (1)	23 Halifaxes 17 Lancasters 16 Stirlings	56	7.9
31 August/1 September 1943 (2)	20 Halifaxes 10 Lancasters 17 Stirlings	47	7.6
3/4 September 1943 (3)	22 Lancasters	22	7.0
18/19 November 1943 (4)	9 Lancasters	9	2.0
22/23 November 1943 (5)	10 Halifaxes 11 Lancasters 5 Stirlings	26	3.4
23/24 November 1943 (6)	20 Lancasters	20	5.2
26/27 November 1943 (7)	28 Lancasters	28	6.2
2/3 December 1943 (8)	2 Halifaxes 37 Lancasters 1 Mosquito	40	8.7
16/17 December 1943 (9)	25 Lancasters	25	5.2
23/24 December 1943 (10)	16 Lancasters	16	4.2
29/30 December 1943 (11)	9 Halifaxes 11 Lancasters	20	2.8
1/2 January 1944 (12)	28 Lancasters	28	6.7
2/3 January 1944 (13)	27 Lancasters	27	7
20/21 January 1944 (14)	22 Halifaxes 13 Lancasters	35	4.6
27/28 January 1944 (15)	33 Lancasters	33	6.4
28/29 January 1944 (16)	26 Halifaxes 20 Lancasters	46	6.8
30/31 January 1944 (17)	1 Halifaxes 32 Lancasters	33	6.2
15/16 February 1944 (18)	17 Halifaxes 26 Lancasters	43	4.8
24/25 March 1944 (19)	28 Halifaxes 44 Lancasters	72	8.9
	Grand Total/Average Losses:	626 aircraft	5.9

Analysis

The statistics of the campaign make for incredible reading: 10,813 sorties, 626 heavy bombers lost, 2,690 British airmen dead and 987 POWs, and 33,390 tons of bombs (17,214 tons of HEs and 16,176 tons of incendiaries, including 5 million 4lb incendiaries) dropped, in exchange for the destruction of about 5,200 acres or 30 per cent of Berlin's built-up area. But statistics alone do not explain the success or otherwise of the Battle of Berlin.

There was no doubt Bomber Command began to suffer increasingly severe losses during winter 1943/44 in the face of a revitalized German air defence. After the war, Harris wrote 'the Battle of Berlin cost us 300 aircraft missing which was a loss rate of 6.4 per cent', and 'this could not be considered excessive for a prolonged assault on this distant, most difficult, and most heavily defended target'. Hamburg, he noted, which was less heavily defended and involved only a short flight over enemy territory, had a similar loss rate 'before the use of *Window*'. Yet British losses – for Lancasters, Halifaxes, Stirlings and Mosquitoes – on all operations to Berlin (including the three attacks in August/September 1943) were double that figure, at 626 aircraft. Such losses only became serious if aircraft and aircrew could not be replaced, and certainly the British aircraft industry and the Empire Training Programme kept Bomber Command re-supplied with replacements, but the point of diminishing returns was surely reached. The fact was that Bomber Command's tactical innovations – a single bomber-stream protected by *Window*, split attacks, feint raids or a dividing an attack – were becoming less effective. Indeed, a concentrated bomber-stream, while protecting individual bombers, made the swarm of aircraft more visible. The only saviour of the British bomber offensive itself lay in concerted action with the Americans to reduce the strength of the Luftwaffe. This led to a catch-22 situation: it was clear that from late January 1944 the continual need to keep hitting the same target was leading to mounting losses, yet such concentration on Berlin was needed to destroy the city.

The inevitable lack of intensity that resulted, coupled with the sheer size, concrete construction and wide streets of the German capital, meant the bombing effort against Berlin never reached the Hamburg scale of concentration and devastation. Indeed, the damage tended to be heavier in the western areas of the city than its eastern parts, principally because of the difficulty of accurately blind marking aiming points around the city. It must therefore be concluded that destroying Berlin remained beyond Bomber Command's powers during winter 1943/44, both in terms of capabilities and aircraft losses.

Raid:	Aircraft dispatched:	Aircraft type dispatched:	Aircraft type losses:	Aircraft losses:	% lost of a/c dispatched:
16/17 January 1943	201 aircraft	190 Lancasters 11 Halifaxes	1 Lancaster	1 aircraft	0.5
17/18 January 1943	187 aircraft	170 Lancasters 17 Halifaxes	19 Lancasters 3 Halifaxes	22 aircraft	11.8
1/2 March 1943	302 aircraft	156 Lancasters 86 Halifaxes 60 Stirlings	7 Lancasters 6 Halifaxes 4 Stirlings	17 aircraft	5.6
27/28 March 1943	396 aircraft	191 Lancasters 124 Halifaxes 81 Stirlings	3 Lancasters 4 Halifaxes 2 Stirlings	9 aircraft	2.3
29/30 March 1943	329 aircraft	162 Lancasters 103 Halifaxes 64 Stirlings	11 Lancasters 7 Halifaxes 3 Stirlings	21 aircraft	6.4
			Grand Total/Average Losses:	70	5.3

All this should have been apparent to Harris. In just six raids on Berlin – the four in January, the one in February and the one in March – Bomber Command's losses were an astronomical 262 aircraft. Such ineffective tactics, and the inability to devastate the German capital, made a victory of strategic bombing against Berlin an increasing illusion – and, indeed, only the transfer of Bomber Command to the pre-*Overlord* bombing campaign saved Harris and the Air Staff from confronting the reality that Bomber Command had lost the Battle of Berlin. Nonetheless, the campaign's losses would create a rod for Harris' own back in his later dispute with the Air Ministry over bombing policy. In November 1944, when Harris was disputing the Air Staff's focus on Germany's synthetic oil plants, the case was made that:

> … Bomber Command have certainly accepted in the past losses, on Berlin for example, which are not likely to be exceeded on the few attacks necessary on Leuna and Politz. They carried out a persistent series of attacks on Berlin between the 18th November, 1943, and 25th March, 1944. The C-in-C's object in this series of operations was the destruction of the city, and it cost 500 aircraft for 30,000 tons of bombs dropped. This was for a strategic purpose far less important than the present one for depleting the enemy's oil production. It is unlikely that such persistent attacks, which proved increasingly costly, would be necessary in the case of Leuna and Politz … Indeed, there seems every prospect of our being able to knock out these two objectives with one or two really heavy well directed attacks in suitable weather conditions… If that series of operations [against Berlin] was worthwhile, operations against our present objectives are certainly worthwhile.

An aerial photo of one of the most iconic landmarks in Berlin, the Brandenburg Gate, in July 1945. The devastation from British and American strategic bombing was colossal, though further damage was caused by the Soviet ground assault on the city. (Photo by William Vandivert/The LIFE Picture Collection/Getty Images)

Did the Battle of Berlin achieve anything at all? Certainly in attacking the German capital specifically, and German cities generally, it tied up huge numbers of personnel and flak guns, which could have been usefully deployed elsewhere, particularly on the Eastern Front. Most importantly, there is no doubt that the material destruction to Berlin was huge. Harris wrote that Berlin was scarcely seen by aircrews and 'for long periods we were wholly ignorant, except from such admissions as the enemy made from time to time, of how the battle was going'. But it was not until March 1944 that HQ Bomber Command was able 'to assess the results of the Battle of Berlin as a whole', which had added 2,180 acres of devastation to the approximately 500 acres that had been destroyed in Berlin before the main battle had begun. 'The industrial damage', it was stated, 'as often happened in rather scattered attacks, was particularly heavy'. It must be said here that Harris was changing the parameters of success: the battle was now increasingly being justified in terms of material damage done. But Harris had pursued the Battle of Berlin with one major goal in mind, Germany's defeat, and by that token the Berlin air campaign failed. It certainly damaged Berlin but, due to a misapprehension about the power and control of the Nazi state and its secret police apparatus, it did not effect a collapse in German morale. As Portal harshly told Harris in January 1945 in a series of correspondence between the two over bombing policy at this time, 'as far as I am aware, there is no evidence to show that she [Germany] was near collapse. She weathered successfully the storm of the subsequent Berlin attacks'.

Bomber Command Battle:	Raid 1:	Raid 2:	Raid 3:	Raid 4:	Total losses of aircraft & average % lost of a/c dispatched:
Battle of Hamburg	24/25 July	27/28 July	29/30 July	2/3 August	
(aircraft losses):	12	17	28	30	87
(% lost of a/c dispatched)	1.5	2.2	3.6	4.1	2.85
3 Berlin raids – Opening Phase of Battle of Berlin	23/24 August	31 August/ 1 September	3/4 September	n/a	
(aircraft losses):	56	47	22	n/a	125
(% of a/c dispatched):	7.7	7.6	7	n/a	7.4
Battle of Hanover	22/23 September	27/28 September	8/9 October	18/19 October	
(aircraft losses):	26	38	27	18	109
(% of a/c dispatched):	3.7	5.6	5.4	5	4.9
4 Berlin raids of the resumed Battle of Berlin	18/19 November	22/23 November	23/24 November	26/27 November	
(aircraft losses):	9	26	20	28	83
(% of a/c dispatched):	2	3.4	5.2	6.2	4.2

In many ways, the hopes, promises and aims of the Berlin campaign had been set artificially high by the success of the Battle of Hamburg. A combination of the shorter distance, the favourable hot weather for incendiary bombing and the concentration of four raids in ten days had conspired to give the 7,000 tons of bombs dropped on Hamburg a horrifyingly impressive result, yet one that was unlikely to be repeated elsewhere, least of all Berlin. The longer distance to the German capital allowed the Luftwaffe's night-fighters to attack the bomber-stream for longer; accurate marking and concentrated bombing continued to remain a problem; and the fact that the 19 attacks of the Battle of Berlin were spread over eight months from August 1943 to March 1944 allowed repairs and recovery to be undertaken in the city. All these factors worked against Bomber Command. The shock of

a heavy and concentrated attack, compressed in time and space, was largely missing against Berlin. On only two occasions, namely the four operations of late November 1943 and the three operations of late January 1944, did Bomber Command come close, but the weather, phases of the moon, maintenance, and the need to undertake other operations meant this could not be sustained. These drawbacks were recognized later on, as in October 1944 Saundby told Harris that:

> I presume that sooner or later we shall turn on to Berlin and attempt to finish it off. Although last winter we managed to keep the loss rate down to 5 per cent … we did not on the whole succeed in concentrating our bombs in the right place. Much of the bombing was scattered, and some of it was even difficult to account for. In particular we found it difficult to concentrate, with any certainty, on the relatively undamaged parts of the city. This uncertainty was caused by our method of marking. Blind markers with H.2.S. Mark.II and later with H.2.S. Mark.III found great difficulty in differentiating between one part of Berlin and another. The enemy has a large and elaborate decoy system employing lights, spoof fires, and spoof markers. If, therefore, we return to Berlin using the same methods of marking as last winter, I think that it may require many heavy attacks, involving the loss of a large number of aircraft, to write the place off.

To this Harris handwrote 'agreed'. Yet contained within Saundby's assessment are references to the limitations of Bomber Command as a force. This was important because it must not be forgotten that a massive level of destruction to Berlin was needed to achieve Harris' aim: Germany's defeat. In any other sense, a capital being bombed regularly and considerably damaged in a battle of attrition would be considered a victory of sorts. But this was not the case with Berlin. What failed here was not the campaign itself but the ambitious objective that Harris had originally set.

Harris' reputation of course stood or fell depending on the outcome of the Battle of Berlin. Launching the campaign in August 1943, his stock was high after the victories of the previous eighteen months: the 1,000-bomber raids, the Ruhr battle, the destruction of Hamburg, the knocking out of Italy and the attack on Peenemünde. But as the Battle of Berlin continued, so Harris' reputation fell; he was not delivering on his bold promise that had, as early as November 1943, been greeted with incredulity by the Air Staff. This disbelief worsened as time went on, and hardened into massive concern. The belief that the Battle of Berlin was fast becoming a strategic airpower cul-de-sac saw the Air Ministry and HQ Bomber Command become locked in an increasingly bitter row over the direction of British bombing policy. The new strategy of the Air Staff, in the face of the mounting costs and evident failing of the Battle of Berlin, brought about a more co-ordinated Anglo-American strategy against a specific target in order to achieve a broader war aim of reducing German air strength over the battlefronts. By this time, Harris and HQ Bomber Command had become isolated, with few supporters amongst the Air Staff; the support of Harris' traditional backer – the prime minister – had lessened. As conflict over bombing policy with the Air Ministry developed, Harris could in no way rely on Churchill's support, and he slipped in importance from this point onwards.

It remains hard to determine whether the Battle of Berlin could have been done differently. Fundamentally, Bomber Command was a product of its time, with all the limitations of early 1940s technology which that involved. Consequently, the Battle of Berlin proved beyond Bomber Command's capabilities at this time. They were never able to solve the problems of blind marking nor find any satisfactory counter to the Tame Boar, which started to prove exceedingly costly. Losses would have been less if the British (and Americans) had achieved air superiority over Germany, but to have done so would have required Harris to have embarked on a different campaign, namely Operation *Argument*, much earlier. This he would

never have done. So, instead, Bomber Command carried on with the Battle of Berlin and simply could not beat the Luftwaffe. By spring 1944, the German night-fighters had made operations to Berlin, other north German cities (such as Leipzig) and even long-distance targets in the south, such as Nuremberg, too costly. The bomber aircrews greeted the change to targets in France with considerable relief.

Seen from the vantage point of mid-1943, the Battle of Berlin was perhaps a logical move, but it was too ambitious – and, ultimately, a source of real anguish and disappointment. Reflecting on it after the war, Harris himself admitted that 'judging by the standards of our attacks on Hamburg, the Battle of Berlin did not appear to be an overwhelming success'. Similarly, Bennett wrote that the Battle of Berlin 'was indeed the bitterest part of the war for me … because of the great losses which we suffered. So far as the Pathfinders were concerned, these losses were particularly serious because they included a large proportion of very experienced and good Pathfinder crews … and at one stage I thought that the backbone of the Path Finder Force was really broken'. The air officer commanding 5 Group, Air Vice-Marshal The Hon. Sir Ralph Cochrane reflected 'Berlin won … It was just too tough a nut'. And Churchill, in one of the few chapters about the bomber offensive in his war memoirs, stated the Battle of Berlin 'fell short of what had been achieved at Hamburg'. Such verdicts were a culmination of the harsh fact that Bomber Command had conducted a strategic air campaign at long range, against a single target (a big one at that) with all the increasing predictability of that focus had on benefitting the enemy's air defences, and in weather conditions that hindered navigation, concentration, bombing accuracy and operational intensity, all without the attainment of air supremacy over enemy territory. Above all, Harris sought to effect a major political outcome, namely German's capitulation, but in so doing he completely misjudged the totalitarian nature of the Nazi state. These considerations were important lessons for the future application of strategic airpower – yet in winter 1943/44 they were learnt at great cost.

FURTHER READING

The sources available on RAF Bomber Command during World War II are considerable. Cited here are some of the most useful original document files, official accounts, memoirs, books and articles that provide additional reading on the Battle of Berlin.

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